An Address

ON THE

USE AND ABUSE OF THE LIME SALTS IN HEALTH AND DISEASE.

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BY

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LADIES AND GENTLEMEN,—I am here to-day to deliver the opening address of your session, in response to your kind invitation which has been twice extended to me. My presence here is to me specially gratifying, as it renews old reminiscences of my residence in this Infirmary thirty-seven years ago under my revered teacher, the late Sir William Gairdner. Many of my friends of those days are still alive, and perhaps as youthful as ever, though some, I regret to say, have joined the great majority.

In selecting a subject for my address worthy of this occasion, I had to recollect that it was going to be delivered before an intelligent and critical Scottish audience, who would expect something new or something true. It is always my habit to adhere to the latter condition, and it will be for you to judge as to the newness or freshness of the presentation.

It occurred to me that as Loch Katrine water was supposed to be very deficient in lime, and when I was here this deficiency was blamed for the prevalence of rickets, you might take some interest at least in the use of the lime salts. The subject of the lime salts has interested me for over thirty years, first from a pathological standpoint, next as therapeutic agents, and finally from a physiological point of view. Perhaps the order should have been reversed, but I studied the questions intermittently as they presented themselves to me, and not in any systematic manner.

In 1876 I published a paper on the effects of overwork on the heart and aorta.[1] I showed how chronic high arterial tension led to atheroma of the aorta. At that time I had not the advantage of any of the numerous blood-pressure instruments which are now on the market. My observations were made with my finger-tips and the sphygmograph. I have still plenty of faith in my fingers; with proper training they become very sensitive instruments of precision. In a paper which I read at the Liverpool Medical Institution on February 17th, 1881, on the etiology of aneurysm,[2] I showed that calcification of the aorta was due to the deposition of lime salts in the atheromatous patches which occurred in the subendothelial layer of the intima.

Between 1882 and 1890 Sydney Ringer[3] performed a series of classic experiments on the physiological effects of the various inorganic constituents of the blood. He showed that for the continuous contraction of the ventricles of the frog's heart the presence of minute quantities of a calcium salt was absolutely essential. Calcium increases the efficiency of the beat but delays dilatation: "The effects produced by lime salts in dilatation, and even the persistent spasm induced by the alkaline preparations, are completely removed by a minute trace of a potassium salt—1 in 10,000 to 15,000."

The ventricle continued to beat perfectly when supplied with a neutral normal saline solution containing minute quantities of calcium and potassium chloride, and therefore alkalinity of the circulating fluid is not necessary for contractility. The alkaline reaction of the blood is no doubt necessary indirectly for contractility, for muscular contractions develop acidity, and this must give an acid reaction to a neutral fluid, and the heart cannot contract when supplied with an acid-circulating fluid.

Sodium bicarbonate added to normal saline broadens the beat and rounds its summit, and slightly prolongs both contraction and dilatation. Owing to the increased breadth of the beat, if the contractions are frequent, there occurs partial fusion of the beats. Sodium bicarbonate also induces some persistent spasm (contracture) if the contractions are frequent. All these effects of sodium bicarbonate are obviated by a physiological quantity of potassium chloride.

He showed the antagonism between the potassium and calcium salts, and that the presence of both in proper proportions was necessary for regular and efficient cardiac systoles. He also showed that this antagonism between calcium and potassium existed even in toxic doses, though the antagonism was somewhat modified by temperature, as hot weather caused much tonic contraction, which was not entirely obviated by the effects of potassium in hastening dilatation.

He found that sodium phosphate and sodium bicarbonate accelerated dilatation without sustaining the contractility of the ventricle, and of the calcium salts the phosphate was the most efficient.

He experimented on fishes, and found that the presence of lime in the water was necessary for the maintenance of life.

I draw attention to the interesting fact that those lime salts most efficacious in sustaining function of cardiac tissue are those best adapted to sustain life in ova and tadpoles, phosphate of lime being far more efficacious than sulphate, and the sulphate somewhat more efficacious than chloride. It would appear that those salts of lime in which the lime atom is least saturated by the acid are the most capable of sustaining function.

It must be remembered, however, that in the human subject where drugs are administered by the mouth the sulphate and tribasic phosphate are practically insoluble, and therefore useless. The glycero-phosphate of calcium is very soluble, and a very effective drug. I recollect being very much amused a few years ago by the statement of a professor of therapeutics that the phosphate of lime cured the toothache of pregnancy. His idea as to the cause and cure of the toothache in a pregnant woman was, to say the least of it, original, but it is to be hoped the idea will die with him.

Dr. Ringer, in association with Dr. Dudley Buxton, showed that the effects of the salts of sodium, potassium, and calcium on skeletal muscles are somewhat different from their effects on the heart. The contractility of skeletal muscles perfused with normal saline solution lasts longer, but when exhausted there is a great delay in relaxation. The contractions are strengthened and the relaxation delayed by potassium salts. On the other hand, the lime salts accelerate both contraction and relaxation. Personally, I have usually found that patients liable to cramp, especially of the calf muscles, have a deficiency of lime in their blood, and thus the remainder-contraction so apt to occur in exhausted muscles is not counteracted by a sufficiency of calcium.

In the present day, when the effect of sodium chloride in the causation of dropsy is so widely recognized, it is worth remembering that Dr. Ringer made experiments on the swelling of laminaria when immersed in water, and he found that sodium and potassium chloride retarded but did not lessen the amount of fluid taken up; on the other hand, even minute traces of the chloride or other soluble salt of calcium greatly and persistently restricted the swelling of laminaria. In the treatment of dropsy the chloride of sodium should be excluded, while the calcium salts are beneficial.

I have given this long summary of the work of Sydney Ringer because in the present day it is practically unknown, or does not receive the recognition to which its great merits entitle it. If it had come from Germany it would have been in every textbook on the circulation. Its clinical importance was not sufficiently recognized because only the few took the trouble to inquire as to whether there was too much or too little lime in the blood, and all estimations on this score were purely guess-work, as there was no method known of estimating the amount of lime in less than a litre of blood, and there was no patient who would spare that amount for the mere sake of knowing how much lime it contained. Sir Almroth Wright used a moderately convenient, but not very reliable, method based on the strength of a solution of oxalate of ammonium required to prevent blood clotting. Since the work of Ringer and Sainsbury[4] and others it has been universally recognized that the presence of calcium was necessary for the clotting of blood and milk. More recently, Blair Bell has shown that the setting of gelatine is also due to the presence of calcium. Recently, in a series of very careful experiments, Dr. T. Addis[5] has controverted the work of Wright, and he concludes:

(1) The coagulation time of the blood is unaffected by the administration by the mouth of soluble calcium salts or of citric acid. (2) The amount of ionizable calcium in the blood is

increased by the administration of soluble calcium salts by the mouth, and is diminished by the administration of citric acid, but the increase or decrease which is thus brought about is considerably less than the degree of variation in the calcium content which is necessary before any appreciable effect is produced on the coagulation time.

In 1907 Blair Bell[6] devised a most ingenious and reliable method of estimating the amount of ionizable calcium in a few drops of blood. Briefly stated, he mixes in a small capsule 250 c.mm. of an aqueous solution of oxalic acid (1 in 30) and 100 c.mm. of blood. After the oxalic acid has had time to combine with the calcium and magnesium in the blood, he adds 250 c.mm. of a weak solution of acetic acid and glycerine, which dissolves the magnesium salts. He next adds 100 c.mm. of the mixture to 500 c.mm. of distilled water. Of this final dilution he places a drop on a glass slide of a Thoma haemocytometer. He counts the number of calcium oxalate crystals in 250 squares, and an average of one crystal per square gives his calcium index 1.0. Blair Bell now considers the normal healthy maximum to be 0.8. This excellent method has not caught on as it should, simply from the fact that it involves trouble, and the ordinary Britisher will not take trouble. When Blair Bell showed the powerful effect of the pituitary extract on involuntary muscular fibre, and its great value in shock, uterine inertia, and intestinal paresis, he had any number of followers, because it is a very simple matter to give a hypodermic injection, so that the drug has been used in all manner of diseases for which it is in no way suited, and Blair Bell has had to complain of its abuse.

When you see a patient in consultation you have usually to make up your mind pretty quickly not only as to diagnosis, but also as to treatment. As to the question whether a patient has got too much or too little calcium in his circulation I have got a good many devices of my own which help me in arriving quickly at a conclusion. These devices I am not going to put down categorically, because they require a good deal of practical experience, but if you are very attentive to this address you may discover them. I frequently have my opinion corroborated or corrected by Pantland Hick, who conducts my blood examinations after Blair Bell's method. For many of the beneficial effects of calcium in health and disease I can strongly recommend my readers to the work of Blair Bell and Pantland Hick on calcium metabolism.

In the following remarks on the use and abuse of the lime salts it will save time and space if I deal with health and disease together.

The Effects of the Calcium Salts on the Circulatory System.

I have referred to the work of Sydney Ringer on the necessity of calcium for the maintenance of the action of the heart and of life. On several occasions I have shown that most chronic diseases of the heart arise from causes acting on the periphery. In my Toronto address[7] I described my methods of estimating the velocity of the blood in the arteries, capillaries, and veins. I also dealt with the viscosity of the blood as the chief cause of the resistance to the flow in the capillaries. Since then I have come to the conclusion that the principal cause of this viscosity is the lime salts, especially the fixed lime. The viscosity can be accurately estimated by the viscosimeter of Du Pre Denning and Watson, and clinically by watching the freedom of flow from a lancet-needle puncture. I determine it by watching the velocity of the capillary circulation in the dorsal surface of a warm finger or hand held at the level of the heart. It is necessary to take the capillary circulation at the level of the heart because the velocity is about doubled by lowering the hand 320 millimetres.

I measure the capillary velocity by gently expressing the blood out of a flat plexus of capillaries in the back of the finger or hand with a rod 10 mm. in diameter, and then watch the time it takes the blood to return with a stop-watch recording fifths of a second. A spot must be selected where the return current comes from all parts of the circumference of the compressed area. In a capillary the axial velocity is double the mean velocity; now the red cells occupy the centre and fill about four-fifths of the lumen of the capillaries, so the actual velocity is about four-fifths of the observed velocity. I therefore put the radius of my rod down as four, although it is actually five millimetres.

From repeated observations I have come to the conclusion that when the capillary velocity is 4 mm. in one second or less there is no excess of lime salts in the blood, but the converse does not hold good.* I have recently seen a case where the capillary velocity was only 4 mm. in one and two-fifths seconds, but the calcium index was only 0.5; the patient was 74 years of age, suffering from arteriosclerosis, with lesions of his aortic, mitral, and tricuspid valves. I felt confident that there was too much fixed lime in his blood and tissues; accordingly I put him on a calcium-free diet and large doses of phosphoric acid. In a week the free calcium ions in his blood had so increased that the index had risen to 1.2, and at the same time the velocity had increased to 4 mm. in one second. In the chilblain circulation the capillary velocity may fall to 4 mm. in two or three seconds, but in this condition almost every one believes that the lime salts are deficient. This is quite true of the free calcium ions, but not necessarily so of the fixed lime. In these cases the fingers and toes are much swollen from the congestion of the large capillaries, but there is no true oedema of the tissues, which would undoubtedly occur if the fixed lime in the blood was deficient. The large molecules of calcium albuminate do not readily transude, and, as Sydney Ringer showed, the oedema of the tissues is inhibited by the presence of the lime salts. On the other hand, in orthostatic albuminuria there is a marked deficiency in the fixed lime, and so the albumen readily transudes through the glomeruli under the increased pressure from the erect posture.

From repeated observations I have come to the conclusion that it is the fixed lime which is concerned in the viscosity and in the coagulation of the blood, and with both these phenomena the free calcium ions which are revealed by Blair Bell's method have directly nothing to do.

The viscosity of the blood in the capillaries increases the work of the heart, but this is merely the second line of resistance, and owing to the large capillary bed it cannot raise the arterial pressure much unless there be also contraction of the arterioles. So far as the lime salts are concerned, this contraction and the action of the heart are due to the free calcium ions. Of course, the secretions of the infundibular portion of the pituitary body and of the suprarenals also lead to such contraction of involuntary muscular fibre, but we are not at present concerned with their excess or deficiency in the circulation. In many cases of orthostatic albuminuria, although there is a deficiency in fixed lime, there may be no defect in free calcium ions, so with the increased capillary velocity there may be contracted arterioles and raised arterial blood pressure. In the maintenance of the arterial blood pressure both the free and fixed lime salts play a very important rôle, both in the input from the heart and in the regulation of the output through the arterioles and capillaries, but I do not wish you to get any exaggerated ideas of their importance, because the secretions of the pituitary and suprarenal glands are also necessary for the regulation of this pressure and the maintenance of life. In Addison's disease, where the vasomotor nerves have not got their natural stimulus, you cannot sufficiently maintain the blood pressure, no matter how much lime you administer. Again, in Landry's paralysis, when you get paralysis of vasomotor nerves with dilatation of the arterioles, the viscosity of the blood may be great, and for a time the heart may act powerfully in order to maintain the blood pressure, but there is an enormous fall in the pressure gradient, and the heart soon gets exhausted pumping blood into the unfilled arteries. There is a great waste of energy and the force of the heart is poorly represented at the periphery. When the capillary velocity falls to about 1 mm. in the second or less, the blood gets charged with carbonic acid; this increases the viscosity and further enhances the work of the heart, but, apart from contraction of the arterioles, it does not raise the arterial blood pressure.

"Good healing flesh," of which many people are very proud, simply means that there is a sufficient or excessive amount of calcium cement in the tissues. This is very useful if you are going to get cut up in strips with a bowie knife, or bruised by a Johnson or Jeffries, as might happen in some parts of America, or if you are going to fall into

* Dr. Haig uses a capillary dynamometer for estimating the amount of purin bodies in the circulation.

the hands of the surgeons, which is a very great risk in this country; but if you are going to preserve the even tenor of your way and live a healthy life to a good old age then you had better not have any unnecessary amount of lime in your blood or tissues. It is one of those cases where you can have too much of a good thing.

My conclusions are that the fixed lime, or that which is linked on to the molecules of albumen, increases the viscosity and coagulability of the blood, while the free calcium ions in association with the suprarenal and pituitary secretions increase the tone and contraction of the arteries and arterioles, heighten the blood pressure, and maintain the force and efficiency of the cardiac contractions. In this latter effect the ions of potassium and sodium play an important part. Lime is by no means the only agent in the production of the viscosity of the blood, which is a moderately viscous fluid, being about five times more viscous than distilled water. The viscosity is augmented by an increase in the number of the corpuscles and in the density, by cold and carbonic acid. It is also important to note that the suprarenal and probably infundibular (pituitary) secretions lead to the retention of lime salts in the blood and tissues, while the thyroid and ovaries increase calcium metabolism, diminish the free and fixed lime in the blood, and thus lessen the viscosity. This has been well shown by Blair Bell, and, on his recommendation, I have for the last three years used with great advantage the calcium salts in the treatment of exophthalmic goître. However, in many cases the great metabolism leads to an excessive amount of free lime in the blood, and hence calcium is not the only factor in treatment. What part the purin bodies play in the viscosity of the blood I am not prepared to say, and at present it is not my business to inquire, but there can be no doubt that lime may be united with uric acid in the blood, tissues, urine, and urinary calculi.

It is very difficult to prove experimentally the part played by calcium in producing and maintaining high arterial pressure, because it is a slowly acting drug; it is absorbed with difficulty by many people, the blood can only hold a limited amount in the free state, and the more alkaline the blood the less it will hold. There are some people, like myself, who absorb lime very readily, but fortunately excrete it almost as quickly. Within two hours of drinking a glass of milk there is a marked increase in the lime in my urine. While we cannot show with the sphygmomanometer that a dose of lime markedly raises the blood pressure, we have the indirect evidence that decalcifying agents quickly and markedly lower the blood pressure and lessen the viscosity of the blood. These agents do not always lessen the free calcium ions, because they take up a good deal of the loosely fixed lime in the blood vessels and other tissues. Under the free use of phosphoric acid I have seen the free calcium ions increase in the blood, while coarse valvular murmurs abated, and in some cases even disappeared. The blood is the agent for carrying the calcium *to* the tissues, and *from* them to the excretory organs.

Sir Almroth Wright has shown the great value of decalcifying agents in the treatment of thrombosis; on the other hand, when you get capillary haemorrhages, whatever treatment the blood pressure may demand, the viscosity of the blood should be increased by the lime salts. When using decalcifying agents the lime salts should be as far as possible eliminated from the diet, hence milk, cheese, the numerous milk foods in the market, animal jellies, and hard water should be interdicted. Five years ago I sounded a note of warning against the indiscriminate use of sour milk, on account of the lime which it contains; but now the craze has sufficiently developed to attract a discussion at the last meeting of the British Medical Association, and to merit the attention of the daily papers. The craze will soon die out, no doubt to be replaced by some other equally absurd, when people find that they are not going to live to the age of Methuselah. Exercise rapidly increases calcium metabolism, and no doubt the Bulgarian peasant can quickly get rid of the excess of lime which he takes in, but it is quite a different matter with the town dweller. Milk is essential for children, and is useful in many diseases where we wish to increase the amount of calcium in the blood, such as cases of haemorrhage, many cases of pneumonia, and the acute stage of typhoid fever, etc., but for the ordinary adult its utility is somewhat limited.

There are many who assert that the tissues will only take up what lime they require, but I am afraid the tissues have often no discretion in the matter. The lime salts are very apt to get deposited in any part of the body which is not properly functionating. I have seen ossification of the costal cartilages in a man of 27 years of age produced by long-continued fixing of the chest with a spinal support.

Arteriosclerosis.—I here use the term "arteriosclerosis" in its widest sense, to include all thickening and hardening of the arteries. However high blood pressure is brought about it eventually leads to degenerative changes in all the coats of the vessels. Very many years ago I showed how chronic high tension led to degenerative changes, with subsequent atheroma and calcification of the deep layers of the intima of the aorta, and lately Oskar Klotz[8] has found that the degenerative changes in the muscular arteries begin in the media. He has also shown that the lime salts are always deposited in the form of calcium soaps, and afterwards the fatty acid is replaced by phosphoric and carbonic acids.* Dr. Klotz has experimentally demonstrated in corroboration of the previous work of Dr. Josué, that the intravenous injection of adrenalin led to degeneration and subsequent calcification of the media. He also suspended rabbits by the hind legs for a few minutes daily, and thus brought about advanced lesions in the aorta. In this connexion it is worthy of note that in rabbits the calcium index is usually high, and in the human being the arteries of the lower extremities, which are usually subjected to the highest blood pressure, are the most prone to arteriosclerosis. In all the aortas from subjects over 25 years of age examined by Dr. Klotz he found more or less calcareous degeneration.

As the degenerative changes proceed the arteries, especially the aorta, gradually lose their elasticity; consequently the energy imparted by the heart to the blood is not properly stored up, there is a great fall in the pressure gradient between the systolic and diastolic pressures—this leads to longitudinal straining of the arteries, the arch of the aorta gets dilated, and the muscular arteries become tortuous. The best way to prevent and improve these degenerative conditions is to maintain a low systolic and a relatively high diastolic pressure. You may not be able to regulate the secretions of the pituitary and suprarenal glands, but you certainly can control the high-pressure effects which they produce. You can stimulate or add to the secretion of the thyroid gland, which increases calcium metabolism and lowers the blood pressure.

In this indirect manner the iodine preparations act. If the degenerative changes in the aorta have not proceeded too far—and this is most readily measured by the difference between the systolic and diastolic pressures—it is really wonderful what the free and long-continued use of decalcifying agents can accomplish. I have seen aortas considerably dilated so that the arch could be easily felt in the suprasternal notch, and the elasticity much impaired, as indicated by the loud, clear, clanging second sound, diminish in size and the second sound become quite normal. I have seen coarse, rough valvular murmurs and cardiac intermissions permanently disappear. Healthy exercise increases calcium metabolism and lowers blood pressure, and for good health a considerable amount of exercise is absolutely essential. At the last meeting of the Association of Physicians a couple of gentlemen detailed their experiments in exercising rabbits in order to cause cardiac hypertrophy. Of course, the rabbits' hearts did not hypertrophy, as any one should have been able to forecast. The way to bring about hypertrophy of the heart is to raise the arterial blood pressure; if they had given the rabbits some digitalis they would have succeeded better.

Women are not so liable to arteriosclerosis as men, because they eat less, are more temperate in all things, and, as Blair Bell has shown, they get rid of a good deal of calcium with each menstrual period. When it does occur in women, apart from kidney disease, it chiefly occurs in those who have borne large families and in those liable to emotional disturbances—emotion acts like suddenly turning a stopcock in a water-pipe connected with the main; it sets up waves of pressure, the chief stress of which is thrown on the aorta. Blair Bell has shown

* I am now informed that over twenty years ago, in the Glasgow Royal Infirmary, David Newman taught that the lime is always deposited in the blood vessels in the form of a calcium soap, and afterwards the fatty acids are replaced.

that many of the ailments of pregnancy and menstruation appear to be due to calcium deficiency.

It may be inferred from what I have previously said that I am not an advocate of the numerous milk foods in the market. It is only fair to state that Dr. Francis Bond of Gloucester is a strong advocate of cheese and the skipping-rope for the maintenance of health, and he has, I think, about skipped into the Eighties. May he long continue to skip and enjoy his cheese! If a man takes plenty of exercise he can easily get rid of any excess of lime. It does not matter much what a healthy man eats so long as he does not eat too much and takes a large variety. It would be a great advantage to the community if there were better cooks and fewer artificial foods. Sydney Smith said:

> Man could direct his ways by plain reason, and support his life by tasteless food; but God has given us wit, and flavour, and brightness, and laughter, and perfumes, to enliven the day of man's pilgrimage, and to charm his pained steps over the burning marl.

Although I am anxious to direct your lives according to the dictates of reason, I have no wish to deprive you of all the sweets of life for the mere sake of prolonging existence.

Angina Pectoris.—There has been a great deal written on this subject of late which I suppose you have all read. I think I have read all the papers and learnt to forget the most of them. I am not going to weary you with any further dissertation, except to point out two types from a therapeutic point of view. There is, first, the spasmodic type or true angina, where the patient is pale, cold and haggard, anxious, and suffering severe pain, with great oppression in the chest. There is a feeling of want of air, though no real respiratory distress; the skin may be dry, or there may be a cold, clammy sweat. The pulse is usually slow, infrequent and firm, though it may be frequent and rather feeble, and is often intermittent. In these cases there is an excess of lime in the heart muscle and also to a less extent in the blood. The following illustrative case may be here recorded.

On June 18th, 1910, I was asked by my friend, Dr. J. Herbert Sykes, to see a lady with him who had been suffering for six months from angina pectoris. Lately the attacks had been increasing in number and severity, and now there were at least a dozen attacks in each twenty-four hours. All the usual remedies had been tried without much avail, and a very grave view was taken of the case. Mrs. C., aged 66, a thick-set, well-nourished woman, pale face, anxious expression, great pain and intense feeling of oppression in region of heart. The attacks are now so frequent that she has scarcely any rest night or day. Heart's area large, 2 in. to the right and 5½ in. to the left of the mesial line; marked tenderness over the front of the chest. Heart sounds fairly clear, and action regular, except for an occasional intermission; at the aortic area there is a long, rough, loud systolic murmur; a low-pitched systolic murmur at the mitral and tricuspid areas; marked pulsation in the veins of the neck, and the liver large and tender; the superficial arteries thickened and tortuous, and the aorta dilated. Pulse 120, fair volume, an occasional intermission, raised tension. Capillary circulation sluggish, 4 mm. in 1⅘ seconds. Skin at present dry, but she has often cold sweats.

I explained my view to Dr. Sykes, that the patient had too much lime in her blood, and more especially in the cardiac muscle. I recommended that all lime should be excluded from her diet, including the hard Southport water; that she should have plenty of acid fruit, half a drachm of dilute phosphoric acid every four hours; also small doses of morphine and atropine until the pain was relieved. Dr. Sykes had never heard of phosphoric acid for angina pectoris, but was quite willing to try it on my recommendation. Pantland Hick found the calcium index of her blood 1.1. I was afraid to tell Dr. Sykes at the time that the free calcium in her blood was only a point over Blair Bell's unit, for fear he might lose faith in the phosphoric acid, and I had not time to enter into a long explanation, so I simply wrote to him that the calcium content in her blood was more than twice that of mine, without mentioning that my friend Hick thought mine at that time (0.5) too low, and also that I had seen the index over 2.0 without any cardiac symptoms. I advised him to continue the phosphoric acid until her tissues were well decalcified, and that I had no objection to nitroglycerine, so long as he recognized that it was a mere palliative. The treatment seemed to have been almost too successful, as I was not asked to see her again. However, in reply to my inquiry, Dr. Sykes wrote me on August 16th: "Mrs. C., the angina patient, has done exceedingly well. Up to the time that you saw her she required to take twelve to fourteen tablets of nitroglycerine daily, so frequent were her attacks. Afterwards the attacks became much less frequent, perhaps one in three or four days. I kept her in bed for about a month; she then got up, but was very weak, shaky, and pulse apt to be intermittent. I stopped the acid mixture, and put her on strychnine and tincture of strophanthus, continuing the same diet. She improved in strength and appetite, so that she was enabled to walk out without any discomfort. About two weeks ago she went with her husband to Bowness, and the latest report is very satisfactory. She is exceedingly pleased with her progress, and thankful that so much relief has been gained. Certainly the increased amount of lime salts was the cause of the trouble."

The second type of angina to which I wish to draw your attention is really not a true angina, but is often mistaken for such and disastrously treated as such. The distress and danger are equally great. These cases are marked by dilatation of the heart, especially of the right side, and increased intracardiac pressure. There is no increase of lime salts, but rather a deficiency. The respiratory distress is real and extreme; there is a feeling of suffocation and great oppression about the chest. The patient is dusky and bathed in a cold, clammy sweat. The lungs get rapidly oedematous. If such a patient is treated with nitroglycerine, nitrite of amyl, or alcohol, his fate is certainly sealed. I have seen many such cases, but a recent one will suffice. It was the case of a stout, flabby lady, aged 56 years, suffering from a much-dilated heart with congestion of the lungs after a protracted attack of rheumatism. When I entered the room she made an effort to raise herself in bed, and was seized with an acute attack of cardiac failure. She gasped for breath, could not speak for the oppression in her chest; her pulse was frequent, quick and small, feeble, and scarcely perceptible at the wrist. She became livid and bathed in a cold perspiration and appeared to be dying. I have no doubt she would have died in less than half an hour if assistance had not been at hand. Before examining her I at once gave her hypodermically $\frac{1}{20}$ grain of strychnine and $\frac{1}{50}$ grain of atropine. There was marked congestion of the lower lobes of both lungs, with commencing acute oedema. She afterwards got a hypodermic injection of $\frac{1}{30}$ grain of strychnine and $\frac{1}{100}$ grain of atropine twice daily; also a mixture of the iodide of calcium and tincture of iodine. She made a good recovery.

Stokes-Adams Disease.—You all know the modern hypotheses as to how the rhythmic function of the heart is started and maintained; how a stimulus is generated at the sino-auricular node, and somehow or other travels through the auricles down the bundle of His to the apex of the ventricles and the papillary muscles, and back again to the base of the ventricles. What is the nature of this stimulus and how it is propagated God only knows, as the nearest approach to a definition which I have heard is that a *stimulus* is a *stimulus*. In this case it is not Scotch whisky, but just a stimulus to contraction. As to its mode of propagation, nothing definitely is known except that it is supposed to travel along the auricular-ventricular bundle, and at the Stannius bridge, between the auricles and ventricles, it moves very slowly, like an old flint gun which often misses fire. Some have supposed that this stimulus has got a wave of contraction of its own, which wave is picked up and reinforced by the ordinary cardiac muscle. On the other hand, Engelmann has shown that it can be propagated apart from any contraction. There are various embellishments of this theory, such as *positive* and *negative chronotropic*, *dromotropic*, *bathmotropic*, and *inotropic* influences. This stimulus runs the risk of being more or less frequently blocked by disease and drugs, so it has been necessary to assume that every healthy muscle cell of the heart has the power of producing a stimulus of its own, which it constantly does, and this is as constantly used up with every contraction, so that after every systole the heart is bankrupt of stimulus. From a therapeutic point of view, as far as I can see, this apparently learned jargon leads only to the grave. It seems to be forgotten that rhythmic action is the function of all muscle; even the skeletal muscles act rhythmically under certain pressure or strain—witness an ankle or patellar clonus. While the myogenists are settling these matters I would advise you to pay some attention to the inorganic constituents of the heart muscle and blood. I have not yet made up my own mind as to the proper treatment of this affection, but I will point out to you the lines along which I think observations should be made. These cases are, perhaps fortunately, few and far between, so that the number which any individual sees is not great. The last case I saw was a lunatic, and he absolutely refused to take any physic. His relatives were quite content to leave the matter to Nature.

In these cases the contraction of the left ventricle,

although very infrequent, is powerful and fairly regular; the systolic arterial blood pressure is high and the diastolic low. There may be two or three ineffective contractions of the right ventricle between the powerful systoles of the left. In these cases you should try to increase the irritability of the cardiac muscle, lessen the remainder-contraction of the ventricles, hasten ventricular diastole, and increase the intracardiac pressure. On this last account this is about the only cardiac affection where a liberal allowance of beer or stout does good. To hasten diastole and lessen the remainder-contraction, active potassium ions are necessary, while the sodium salts should be diminished. For the maintenance of efficient cardiac contraction, free calcium ions are essential, hence all agents which increase calcium metabolism do good, such as thyroid gland and iodine. I have found a combination of calcium iodide, potassium chloride, and tincture of iodine useful. Also phosphoric acid with the glycerophosphates of potassium and calcium.

In this connexion the work of George Ralph Mines[9] is very interesting and instructive. He showed that "the chlorides, nitrates, and sulphates of lanthanum, cerium, and yttrium (unlike those of aluminium) form neutral aqueous solutions. Such solutions added to Ringer's solution made up without alkali will, when perfused through the frog's heart, stop it in diastole when the mixture contains only a hundred-thousandth or even a millionth gram molecule of the rare earth in a litre. The effect is very slowly removed by washing out with neutral Ringer's solution, but the beat is instantly restored by the addition of a little alkali". . . "The close parallel between the action of acids and of the salts of the rare earths on an artificial membrane and their actions on the living heart seems to have a special significance in view of the strong probability that the rhythmic activity of the heart depends on the relations which obtain between the ions within and without the cells."

My text covers a very large area, and I have occupied so much time with a small portion of the field that I am afraid in the remainder of my address I cannot give you much more than headlines; you must fill in the details. I do not wish you to get the idea that the maintenance of health and the treatment of disease consist only in the regulation of the lime salts, but this is merely the part of the subject with which we are at present dealing.

Diseases of the Lungs: Pneumonia.—This is the disease in which I first began the systematic use of lime salts about twenty years ago. I had noticed that in the acute stage of pneumonia the more scanty and the more sticky the expectoration, the more viscous the blood, the more lime salts and leucocytes it contains, *caeteris paribus*, the more favourable the prognosis; on the other hand, the more fluid and haemorrhagic the expectoration, the more liquid the blood, the less the lime salts and leucocytes the worse the prognosis. Dr. Auld[10] has also shown

> that pneumonic consolidation is Nature's method of localizing the morbid process and curing the disease. . . . Moreover, in cases of pneumococcus infection showing little or no tendency to pulmonary hepatization—when the pneumococci run riot in the organism, so to speak—the result is always grave, and indeed generally fatal.

Asthma.—In the attacks there is an excess of free calcium ions in the blood, and in the treatment, both during and between the paroxysms, the intake of calcium in the diet should be strictly regulated. During the paroxysm not merely antispasmodics, but also decalcifying agents should be freely prescribed. A milk diet should be rigidly excluded.

Bronchitis and Emphysema.—In chronic throat cough, bronchitis, and emphysema alcohol and tobacco should be strictly interdicted. The individual should, as far as possible, live in a dry atmosphere and have a dry diet. There is not, as a rule, too much free lime in the blood, but in later stages there is too much fixed lime; you get rigid costal cartilages and a fixed chest wall. One writer thinks that a large rigid barrel-shaped chest is an advantage in emphysema, because it increases the size of the chest, and he thinks exercises a constant suction, thus assisting the heart. This idea is about as absurd as an individual hanging on to the handle of a pump and expecting the instrument to go on working. The practical person would keep moving the handle of the pump, so I would advise you never to let your costal cartilages become rigid if you can help it, but if they do, increase their function by respiratory gymnastics, use decalcifying agents, and lessen the intake of lime.

Acute Infectious Diseases.—Recently Major W. D. Sutherland and Captain D. McCay[11] have shown the inhibitory influence exerted by hypertonic saline solutions and calcium chloride on the action of specific haemolysins, and in blackwater fever they recommend large intravenous or subcutaneous transfusions of a solution containing sodium chloride 12 grams and calcium chloride 0·25 gram to the litre of distilled water. In septicaemia, pyaemia, and infective endocarditis the lime salts do good. They are also useful in pernicious anaemia.

Acute Rheumatism.—In this disease there is an excess of free calcium ions in the blood, and a tendency to fibrin formation. The increase in calcium raises the blood pressure, and this increases the liability to heart mischief. The valves which are subjected to the greatest strain are those which are affected. In valvulitis and pericarditis decalcifying agents should be freely used. A milk diet always does harm, whereas plenty of red meat, which increases the ammonia in the tissues and thus neutralizes the sarcolactic acid, is beneficial. In gout there is more frequently an excess of lime in the tissues and urine than in the free state in the blood; a decalcifying agent like phosphoric acid is useful.

The Nervous System.—It seems to me that those lob-sided cranks who constitute the Food Reform Association must have a good deal of lime in their brains, as their ideas seem as firmly fixed as if they were set in plaster-of-Paris. However, there are some of them who have got an axe to grind that are not such fools as they look. If you want to think quickly, speak quickly, and act quickly, you had better not have too much lime in your nervous tissue, but, on the other hand, for stability and tenacity a certain amount of lime is necessary. I sometimes think it might be worth while to have a typically slow, deliberate, solid Aberdonian chopped up to see how much granite is in his composition. Their salvation seems to rest in oatmeal and Scotch whisky, and thus the calcium is never allowed to reach the cement stage, so you never meet one who is stolid; even the ubiquitous and versatile Jew has no chance against an Aberdonian. Scotsmen, as a rule, do not sink with their gravity or rise with their levity.

Epilepsy.—All the soluble calcium salts do good in this disease, but their administration is not sufficient, you should also lessen the sodium salts, which increase excitability and conductivity of nerve; hence I allow epileptics very little table salt in their food. You should also avoid all decalcifying agents, such as acids, acid salts, and acid fruits, and you should correct any acid fermentation in the stomach. All kinds of milk foods are good. The magnesium salts have a somewhat similar effect to that of calcium, and they constitute the best purgative in this disease. If you wish to use a bromide, which is not always necessary or desirable, then the strontium bromide is the best. Of the calcium salts, I am inclined to think that the iodide is the most efficient in this disease, and it is effective in much smaller doses than any of the other lime salts.

Disseminated Sclerosis.—The lime salts are useful in this disease and the sodium salts injurious, and all acids should be avoided. However, I prefer the salts of zinc, especially the sulphate, with which I have had some excellent results. In this connexion I may mention that in England, to any one who has been in a railway accident, or who wants something out of the Workmen's Compensation Act, exaggerated knee-jerks are a valuable asset; it is often painful to listen to the exaggerated importance which is frequently attributed to this simple sign, which can be readily developed, and is not of much consequence when it is developed. If the knee-jerks are exaggerated in a person who is not taking strychnine, and is not suffering from any obvious nerve lesion, there is usually a deficiency of lime. When the knee-jerks are excessive, or there is other evidence of nerve irritability, you should not prescribe strychnine—a drug which is about as much abused in the present day as digitalis.

Locomotor Ataxia.—The lime salts in this disease are in excess. The treatment from which I have seen the best results has been phosphoric acid and strychnine, Fraenkel's exercises, and the avoidance of a milk diet

Some wonderful results—real or imaginary—have lately been ascribed to mercury, contrary to all former experience. It is supposed that the mercury destroys the *Spirochaetae pallidae*, or their toxins, but I am inclined to agree with those who think that the spirochaetes and their toxins have disappeared long before the appearance of locomotor ataxia. Any good effect which the mercury may have must, therefore, depend on the influence of the metal on the nerve tissue, though I should scarcely expect any of the heavy metals to prove advantageous in this disease.

Neurasthenia and Hysteria.—These are protean or nondescript diseases, a refuge for the destitute. The lime salts are very variable, but, as a rule, deficient, and, at any rate, the metabolism is defective, hence when you wish to give a calcium salt it should be in an active form, such as the iodide, chloride, or glycero-phosphate.

Migraine.—As a rule, the lime salts are in excess, and there is also some intestinal toxaemia. Cutting off the lime salts in the diet and giving a course of sulphate of magnesium in the mornings do good.

The Skin: Eczema, Urticaria, etc.—I believe nowadays dermatologists look upon the majority of cases of eczema as microbic in origin, but I think the irritation may come from within as well as from without, and that in many cases the germ lies in a deficiency of lime and in a dilated stomach. The old gouty eczema is not such a myth as some suppose it to be. In urticaria, enema and serum rashes there is a deficiency of lime in the blood.

Muscular System.—In myalgia, or the so-called muscular rheumatism, there is a deficiency of lime and an effusion into the muscular sheath. Any dilatation of the stomach or acid fermentation should be corrected. The diet should be fairly salt-free, contain no acids, and not much starch. I prefer a meat diet, and in place of milk the lime can be taken as medicine. There should be no sour milk given.

Tetany and Cramp.—Tetany, and cramp of the calf muscles which usually occurs at night, are often associated with dilatation of the stomach and acid fermentation; in both the lime salts are defective. The treatment is best conducted by attention to the intestinal tract.

Wounds.—Wounds of all kinds heal best when there is a fair amount of calcium in the tissues affected. On the other hand, you may have too much lime and more repair than is either necessary or desirable. Blair Bell has shown that there is a large amount of lime in all scar tissue. All the operations of the surgeons in Dupuytren's contraction have ignominiously failed, and as a rule only made matters worse. I have found an excess of lime in the blood in such cases, and lately I have been treating them—with what success remains to be seen—by increasing the function of the part affected and by using general decalcifying agents.

The Digestive Tract.—In the so-called congenital hypertrophic stenosis of infancy I believe the causal agent to be the excessive amount of lime in cow's milk setting up first spasm and then hypertrophy of the pyloric walls. If this be so the disease is not congenital, and the treatment is largely a question of diet. If there be no mother's milk and the cow's milk must be used, then it should be well diluted and contain a considerable quantity of citrate of sodium. Olive oil is useful as a nutrient and to relieve the spasm.

Lime is absorbed into the system through the intestinal mucous membrane, and this is also the most active agent in excreting it.

Professor Benjamin Moore[12] says:

> It is now generally accepted that the neutral fats of the food are completely split up in the course of intestinal digestion, by the lipase of the pancreatic juice, into free fatty acids and glycerine, and that the fatty acids are then rendered soluble by the bile salts and lecithin, either in the form of free acids or as alkaline soaps. So that all the constituents formed in fat digestion are finally taken up by the columnar cells in soluble form.

He also holds that the absorbed fat is re-synthesized to neutral fat in the intestinal mucous membrane, and while

> the detached cells of the pancreas, mucous membrane of the intestine, and mesenteric lymphatic glands have a powerful action in setting fatty acid free from soap, no synthesis of neutral fats has been obtained by the action of such cells or their extracts upon solutions containing soap and glycerine.

Dr. O. T. Williams,[13] who has done some important work on fat digestion and assimilation, has shown that—

there are conditions in the intestines in which certain soaps or other insoluble compounds of fatty acids are not absorbed by the intestinal mucous membrane, and that with the presence of these conditions certain diseases of the alimentary tract are related. The analyses here given show that true intestinal sand, appendix concretions, and some bodies formed in the intestines are largely formed of fats and calcium soaps. The fats and soaps present are compounds of saturated fatty acids. The constitution of these bodies and their relation to each other in chemical constitution throw, in my opinion, much light upon the etiology of appendicitis and mucous colitis, and possibly upon the underlying factors in certain diseases accompanied by colic.

Dr. Williams[14] has also shown that in countries such as Italy, Greece, and Spain, where large quantities of unsaturated fatty acids, such as olive oil, are taken, appendicitis is comparatively rare. My own experience corroborates the views of Dr. Williams. In my opinion, if people were more careful in their diet and kept their bowels freely open—thus preventing the *Bacillus coli* assuming a malignant type—appendicitis would be a rare disease. The more acid the contents of the colon, the less the putrefaction and the less the liability to appendicitis and colitis.

Some persons absorb lime very badly, and this is perhaps due to the form in which it is presented to the mucous membrane. The insoluble fats, stearin and palmitin, which constitute the greater part of beef and mutton fat, can be extracted from the faeces to the extent of 80 per cent. or more. When these fats are split up their acids readily combine with calcium, forming insoluble soaps which irritate the mucous membrane. On the other hand, cod-liver oil, olive oil, butter and bacon fat contain a large quantity of unsaturated fatty acids, which even with lime form soluble soaps. When, therefore, a person is on a milk diet, or for any reason taking lime, the fat which he takes should largely consist of olein. Butter is much better than margarine, because it contains more unsaturated fatty acid.

Colitis.—In some cases of obstinate constipation there is too much lime in the blood and in the intestinal wall; the same remark applies to the spasmodic form of colitis where there is very severe colicky pain, but where the mucous membrane is to a slight extent involved in the colitis there may be attacks of diarrhoea alternating with the constipation. In such cases there is also intestinal sand in the form of insoluble calcium soaps.

In mucous colitis the calcium index is frequently low, though not invariably so, owing to defective absorption of lime on account of the formation of insoluble calcium soaps, and owing to excessive excretion of lime. In such cases there is diarrhoea, but where there is a fair absorption of lime with a moderately high calcium index the diarrhoea may alternate with constipation. The colitis in dysentery, typhoid fever, tuberculosis, and summer diarrhoea is, of course, microbic in origin, but the forms with which we are here dealing are due to dietetic errors.

In the treatment of spasmodic or mucous colitis or muco-entero-colitis, milk, cheese, all milk foods, animal jellies, and hard water should be forbidden. The fats should be of the unsaturated type, and I usually order a wineglassful of olive oil at bedtime each night. If there be diarrhoea, the acid sulphate of sodium is an excellent drug, while if there be constipation the ordinary sulphate with the citrate of sodium answers better.

Cirrhosis.—In cirrhosis of the liver the calcium index is generally low owing to the catarrh of the stomach and intestines set up by the alcohol. The first part of the treatment is to stop the alcohol and cure the catarrh.

The Urinary Tract.—Dr. Mackarell, Professor B. Moore, and Professor Thelwall Thomas[15] have recently shown that in a preponderating number of renal calculi—at least in Liverpool—there is a large amount of oxalate and phosphate of calcium. This is no more than might be expected anywhere, as healthy kidneys always excrete a certain proportion of lime, though not so much as is excreted by the bowel. The excretion is greatest when the blood is most alkaline; hence the excretion, even under ordinary diet, is greater during the day than it is at night, and on a milk diet the increase is often very marked. Blair Bell and Pantland Hick found the calcium index of the blood to fall gradually during the day, and I think this apparent periodicity is due to the increased excretion. When the kidneys are diseased the defective excretion often leads to retention in the system. The late Dr. J. H. Bryant and Dr. W. Hale White[16] recorded a

unique case of calcification of the arteries, and obliterative endarteritis associated with congenital hydronephrosis, in a child aged 6 months. The right foot was gangrenous, and the changes in the anterior tibial artery extreme. The child was fed at the breast for the first two months, and on cow's milk for the last four. In chronic Bright's disease and in advanced granular kidneys the excretion of lime is very defective, and yet in these diseases milk is almost universally prescribed by the medical profession. In the albuminuria of adolescence or orthostatic albuminuria there is no defect in the excretion of lime, and in such cases milk is beneficial.

As a matter of ordinary routine in my examination of the urine I always precipitate the lime. This helps me to estimate not merely the activity of the kidneys, but also the calcium content of the blood. If there be no excess in the blood there is not likely to be any excess in the urine, but in all these examinations the condition of the kidneys and the specific gravity of the urine must be taken into account—in *urina potûs* you do not expect to find much lime or anything else.

In conclusion, ladies and gentlemen, I must thank you for a very patient hearing. I feel that the address has been very long, but I could have made it much longer without exhausting the subject. However, I think I have said enough to show you that I attach considerable importance to the lime salts in health and disease.

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A SIMPLE CURATIVE TREATMENT OF CHOLERA.

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THOSE who have had to deal with cholera cases in the tropics must often have felt great disappointment at the absence of any material improvement in the treatment of the disease as a direct result of Koch's discovery of the causative organism. The lack of power to check the copious evacuations and prevent the onset of collapse in the acute stage, and the no less helplessness in the presence of later continued suppression of the functions of the kidney, with slow but sure uraemic poisoning, make cholera a terrible disease to contend with. Feeling convinced that a careful study of the changes in the blood would yield valuable indications for its treatment, I have carried out a long series of researches on these lines,[1] especially during the past three years. The first result was the reduction of the death-rate to barely one-half by the use of hypertonic saline intravenous injections in the collapse stage, and blood-pressure-raising measures as a preventive of later uraemia. These have already been published elsewhere,[2] so they will only be summarized here as a preliminary to an account of a more directly curative treatment, which has yielded still more remarkable results during the last twelve months.

THE BLOOD CHANGES AS AN INDICATION FOR THE USE OF HYPERTONIC SALINE INJECTIONS.

I first studied the loss of fluid from the blood and the degree of its concentration by measuring the volume of corpuscles and serum respectively by means of the haemocrite. Table I gives the results, which show that in the mildest cases, not requiring transfusion, an average of one-third of the fluid had been lost from the blood; in severe cases recovering after hypertonic injections, one-half of the fluid had been lost; while in the most severe fatal cases no less than two-thirds of the fluid of the blood had escaped. There was thus a very definite relationship between the amount of fluid lost and the severity of the case, although the rapidity of the loss is doubtless also a factor of great importance, as pointed out by Wall. These observations clearly indicate the necessity of replacing the lost fluid in the collapse stage of cholera.

TABLE I.—*Blood Changes and the Effects of Hypertonic Saline Injections in Cholera.*

	Normal.	Average of 7 Fatal Cases.	Average of 12 Cases Recovering after Transfusion.	Average of 5 Mild Cases not Transfused.
Percentage of corpuscles	45	71	63	56
Percentage of serum...	55	29	37	44
Loss of serum... ...	—	64 per cent.	52 per cent.	35 per cent.
Pints of saline injected	—	3.7	3.6	—
Serum after injection	6	61 per cent.	61 per cent.	—
Blood pressure before injection	110	0-50 mm.	51 mm.	71 mm.
Blood pressure after injection	—	97	107	—
Chlorides before injection	0.8	0.79	0 90	0.92
Chlorides after injection	—	0.95	1.07	—

Of equal importance is the discovery that in cholera, in addition to the loss of fluid from the blood, there is also a great loss of the salts. Thus, instead of the percentage of chlorides becoming increased with the concentration of the blood, it remains comparatively low, and may even be below normal in the worst cases, the loss of salts being in some degree in proportion to the severity of the case, as shown in Table I. This change accounts for the comparative failure of injections of normal salines in cholera collapse, and furnishes an additional reason for the use of hypertonic solutions in order to replace the chlorides, as well as the fluid, lost from the blood in cholera. Raising the salts in the blood appears to check to some extent further loss of fluid from the blood, and so hypertonic injections are not often rapidly followed by an increase of the watery stools, as is so usually the case after normal salines, with rapid recurrence of collapse.

The results of this treatment during two years at the Calcutta Medical College Hospital, compared with the records of the same hospital during eleven years before the revival of intravenous injections by me, are shown in Table II.

TABLE II.—*Results of Different Forms of Treatment of Cholera.*

Period.	Treatment.	Cases.	Deaths.	Percentage.	
				Deaths.	Recoveries.
1895-1905 ...	Rectal and subcutaneous salines	1,243	783	59.0	41.0
1906	Normal salines intravenously	112	57	51.9	49.1
1907	Rectal and subcutaneous salines	158	94	59.5	40 5
1908-1909 ...	Hypertonic intravenous salines	294	96	32.6	67.4
Aug., 1909, to July, 1910	Hypertonics *plus* permanganates	103	24	23.3	76.7

During the eleven earlier years the death-rate was 59 per cent. In 1906, when normal salines were used intravenously by Captain Megaw, I.M.S., and myself, it fell slightly to 51 per cent, but on their being given up once more in 1907 as of little use, it rose again to 59.5 per cent. The hypertonic solutions were commenced early in 1908, and during two years' observations the mortality among 294 cases was only 32.6 per cent., or but little more than one-half the previous rate, thus affording most conclusive evidence of the great life-saving value of the new method.

The technique of the injections has been fully described by me in the *Indian Medical Gazette* of November, 1909,[3] including a simple method of regulating the rate of flow, so only the following points need be mentioned here: The hypertonic solution consists of 120 grains of sodium chloride, 6 grains of potassium chloride, and 4 grains of calcium chloride to one pint of sterile water, so as to approximate in its composition to Ringer's fluid. Both Burroughs and Wellcome and Parke, Davis and Co. stock soluble tablets of this formula, such that four to a pint make my hypertonic solution (1.35 per cent.), while three in the same amount of water (0 95 per cent.) is suitable for rectal

injections. Down Brothers make my stopcock cannula and graduated transfusion bulb for regulating the rate of the flow into the vein. In marked collapse in an adult male with little or no pulse at the wrist, three or four pints should be given intravenously at the rate of not more than 4 oz. per minute, being slowed at once to 1 oz. per minute if any distress or severe headache is caused. The specific gravity of the blood is a valuable guide, as, if it is raised to 1062 or over, the above quantities may safely be given. If it is not above normal the collapse is probably not due to cholera, and such copious intravenous injections may be dangerous by producing oedema of the lung. A patient admitted to my ward as cholera, with marked collapse and epigastric pain, was found to have a blood specific gravity of only 1048, so was not transfused, although obviously dying. *Post-mortem* haemopericardium from perforation of the aorta was found, in which condition transfusion would have only hastened her death.

If collapse recurs after a hypertonic injection for cholera the same strength should be repeated. A marked rise of temperature follows these injections, which occasionally goes on to hyperpyrexia. I have found that this grave complication occurs most commonly in patients whose rectal temperature is above normal on admission, even if the surface of the body is cold. In such cases the fluid should be given at only just blood heat, or, better, a little below. In a recent case of cholera with complete loss of pulse, an axillary temperature of 101° and a rectal one of 105°, an intravenous injection was given at a temperature of only 86° F., and with external applications of cold the hyperpyrexia was controlled, the circulation restored, and the patient safely tided over the collapse and reaction stages, recovering completely.

The Prevention of Post choleraic Uraemia by Maintaining a High Blood Pressure.

Another very important fact brought out by my researches is the close relationship between continued deficient blood pressure and fatal post-choleraic uraemia. Daily observations on a large number of cases have shown that every adult whose blood pressure remained continuously below 95 mm. died of uraemia, while if it is raised to over 105 mm. urine is almost invariably freely secreted. Moreover, in fatal uraemia *post-mortem* saline perfusions through the renal circulation revealed very evident obstruction to the flow through the organ, due to the great congestion and haemorrhages into the organ, which was clearly the cause of the suppression of urine. Daily manometer observations have enabled the danger of uraemia to be foreseen, and by using all means to raise the blood pressure to the necessary height I have been able to reduce the proportion of deaths from uraemia to the total admissions to one-half of the former rate,[4] and that, too, in spite of having tided so many severe cases over the collapse stage by hypertonic transfusions, to face the dangers of continued suppression of urine. In fact, I regard this discovery as only second in importance to the value of the strong salt solutions. The measures used include rectal, subcutaneous, and occasionally slow intravenous injections of normal salt solution (0 95 per cent.), cardiac tonics, such as digitalin and strophanthin (the latter intravenously), and the vaso-constrictors, adrenalin and pituitary extract.

By the above means the circulation is usually rapidly restored to such a degree as to lead to the free excretion of the toxins through the kidneys, which is far safer and more satisfactory than Johnston's attempt to eliminate them by purgative treatment. Although by these various measures the mortality of cholera has been reduced by nearly one-half, yet even this system of treatment frequently fails in the most severe and late cases, and especially in immigrant Europeans, whose attacks are more serious than those of native inhabitants of the endemic areas of Lower Bengal. If collapse recurs after a hypertonic injection, repetitions also often fail to save the patient. In some very severe cases the restoration of the circulation by salines is followed by absorption of a lethal dose of toxins from the bowel with high fever, which, in my experience, is always fatal if unconsciousness ensues. Yet to neglect transfusion in these cases is only to allow the patient to die of collapse. I therefore became convinced that any further reduction in the mortality could only result from some more directly curative means, while the power to greatly prolong life, even in very serious cases of cholera, by the hypertonic injections led me to hope for further progress in such a direction.

The Destruction of Toxins in the Bowel as a Curative Treatment of Cholera.

Since the discovery of the comma bacillus, innumerable intestinal antiseptics have been used in the treatment of cholera with a view to destroying the causative organism in the bowel. The simple fact that none of these have come into general use, taken with the sustained mortality of the disease for many years past (the death-rate of cholera in the British army in India, for example, having during recent years been nearly 80 per cent.), is sufficient evidence that such antiseptics have no specific action against the disease. Their failure may best be explained in the following manner. We know that the comma bacilli are practically limited to the interior of the bowel, and only penetrate slightly into the mucous membrane. The symptoms of the disease are therefore largely due to the absorption of the specific toxins from the intestinal contents. Now these toxins are mainly, if not entirely, intracellular in nature, and are only set free from the bodies of the bacilli after their death and disintegration in the alkaline bowel fluids, for the rice-water stools of cholera are distinctly alkaline. This being the case, it is easy to conceive that the extensive destruction of comma bacilli in the bowel by intestinal antiseptics may actually result in the more rapid absorption of the deadly intracellular toxins, and so aggravate instead of curing the disease. In this connexion it is worth recalling the observations of Gotschlich and Weitgang that in agar cultures of forty-eight hours' incubation only 7.43 per cent., and after sixty-eight hours only 0.8 per cent., of the cholera spirilla present at the end of the first twenty-four hours were still alive. This tendency of the organisms to quickly reach their maximum numbers, and then as quickly die out and liberate their endotoxins, best explains the short but sharp nature of an attack of cholera, as pointed out by Strong. It at once becomes clear, from these considerations, that an effectual cure of cholera—apart from any specific anticholeraic serum—is most likely to result from some simple method of destroying or rendering harmless the toxins within the bowel itself, thus preventing their absorption in fatal doses. I therefore set to work to find such an agent of a non-poisonous nature.

The Action of Oxidizing Agents in Rendering Bacterial Toxins Innocuous.

A consideration of the close affinities in their chemical nature and physiological actions between bacterial toxins and snake venoms led me to test the effects of oxidizing agents on the former. The remarkable power of permanganates in destroying the toxicity of snake venoms was shown by Lacerda as long ago as 1881, and confirmed by Brunton and Fayrer soon after. In 1903 I tested the action of potassium permanganate on a number of Indian, African, and American venoms, and found a small quantity of this drug was equally effective against each of them, since which many lives have been saved by the local use of this remedy by means of Slr Lauder Brunton's snake lancet. I have recently carried out a number of experiments which demonstrate an equally remarkable action of permanganates in rendering harmless certain bacterial toxins. Those relating to cholera toxins may be briefly referred to here.

Although dead cholera bacilli containing the intracellular toxins are not fatal to pigeons when injected subcutaneously, I have found that a quarter of a culture tube injected intravenously kills these animals in from twelve to eighteen hours. Yet I have been able to inject three times that amount, previously mixed for half an hour or less at blood heat with 3 mg. of calcium permanganate, without death resulting, although some immediate dyspnoea may result from the effect of the precipitate formed in the mixture. The toxin thus appears to have been destroyed by the oxidizing agent. I have not been able to use larger doses, as 5 mg. of the permanganate salt intravenously caused rapid death of pigeons with convulsions. I was also unable to test the action of the toxins given intraperitoneally in guinea-pigs, as unfortunately the salt here also proved to be poisonous, while of course they cannot be given intravenously with safety in sufficient amounts to be of therapeutical value in larger animals or in man.

ADMINISTRATION AND DOSES OF PERMANGANATES.

Although in cholera the bowels are so completely cleared out of their normal contents, and the watery stools contain very little albuminous matter, still, it is not to be expected that the usual small doses of 2 to 3 grains at long intervals, as given in amenorrhoea, could exert much influence in destroying toxins in the small intestine. On coming into contact with unstable animal albumens the oxygen is set free in a nascent form and manganese dioxide precipitated, which appears to be largely inert in the bowel. I have already given up to 50 grains within a day or two, without the slightest indication of any harm having resulted from it, and intend to push it still further in bad cases in the future.

The permanganates are given in two different ways. First, in solution, to drink *ad libitum* in the place of water. Beginning with ½ to 1 grain to the pint, on account of the unpleasant astringent taste, the strength is rapidly increased up to 4 to 6 grains in 1 pint, or even stronger if the patient will swallow it. Fortunately, in severe cases the thirst is so great that no difficulty is usually experienced in pushing the drug in this way. Vomiting may occur, but does no harm. On the contrary, it probably helps to remove some toxin. I have even known obstinate vomiting in cholera relieved by the permanganate drinks, doubtless by destroying some irritant substances in the stomach. Calcium permanganate is the best salt for this purpose, being somewhat less astringent than the potassium one, while as it is divalent it will exert a greater oxidizing action. The calcium element may also possibly lessen the effusion through the bowel wall. The other method of administration is in pill form, for which purpose the potassium salt is more easily dispensed on account of the very hygroscopic properties of the calcium and sodium compounds. The simplest method is to mix two grains of potassium permanganate with a little kaolin powder and vaseline, and make as small a pill as possible. It is then coated with salol one part, in sandarach varnish five parts, or with keratin so as to only dissolve on reaching the alkaline small intestine, where its action is wanted. It is important to see that the pills readily dissolve as they sometimes become hard and inefficient after being kept some time, and may then pass through the bowel unchanged. Two leading firms are investigating the best way of putting up the permanganates at my suggestion, so a thoroughly efficient preparation is sure to be available very shortly. I now give one pill every quarter of an hour for the first two hours, and then every half-hour until the stools become coloured green and less copious, which usually occurs in about twelve hours. In mild cases they need only be given during alternate four-hourly periods. Barley water may also be administered to maintain the strength, as it is not readily acted on by the permanganates. At the beginning of the second day eight more pills are given, and in severe cases this is repeated on the third day in order to avoid relapses which have occurred in three cases. They all promptly yielded to a renewal of the permanganate treatment, thus furnishing an additional reason for believing its action to be directly curative.

RESULTS OF THE PERMANGANATE TREATMENT.

The internal administration of permanganates in cholera for the purpose of destroying the specific toxins within the alimentary tract was commenced in August, 1909. By the end of the year 17 cases, including 10 severe attacks requiring transfusion, had been treated, with only 1 death. The mortality at that season, however, is usually lower than in the first quarter of the year, when I felt sure such a phenomenal recovery-rate could not possibly be maintained. I therefore contented myself with mentioning the new treatment in a lecture to the Calcutta Medical Club in December, 1910,[5] and determined to pursue it for a complete year before fully analysing the results obtained, which are as follows:

In the first quarter of 1910 several very severe cases were lost, but the mortality was still 15 per cent. below that of the same period of the previous year. During this time the proper dosage and best methods of administration were being worked out, and the knowledge so gained may bear further fruit in the future. The mortality for a complete year from August, 1909, to July, 1910, inclusive, has been 23.3 per cent. among 103 cases, against 34.7 per cent. in the first complete year of hypertonic transfusions alone, and 59 per cent. in the eleven years before the revival of transfusion. Thus, the mortality, which had been reduced by nearly one half by the hypertonic saline injections, has now been reduced by the addition of the permanganate treatment to but little more than one-third of the old rate. This further great gain is particularly satisfactory, as it can only be due to saving very severe and previously hopeless cases. It is still possible that slight further improvement may result from pushing the treatment, which necessarily had to be used with considerable caution at first. That the drug is not very toxic in nature will be clear from the following case, which was under the care of Captain J. W. D. Megaw, I.M.S., at the European Hospital: A young adult male swallowed half an ounce of solid potassium permanganate crystals in an attempt to commit suicide. When he came under observation, it was already too late to wash any of the salt out of the stomach, yet he made an excellent recovery after only a fairly acute pharyngitis and a very mild gastritis.

Before accepting the reduced mortality of the last twelve months as due to the new line of treatment adopted, it is necessary to be certain that the cases dealt with were not milder than usual. That they were undoubted cholera is beyond question, for, in the first place, the typical symptoms of the disease were present, all clinically doubtful cases having been excluded. Secondly, the diagnosis has been confirmed bacteriologically in almost every case by finding large numbers of comma bacilli in the stools, while in many they were also isolated and found to give the serum reactions in high dilutions, commonly as high as 1 in 10,000. Regarding the severity of the disease, we fortunately have an admirable control in the figures of the neighbouring Campbell Hospital, which for a number of years previously to the use of transfusion ran closely parallel with those of the Medical College. Until the last three months my methods have not been used there, and the mortality in the first quarter of this year was no less than 71 per cent., the disease having thus been of at least average, or somewhat over average, severity. From May to July, however, hypertonic transfusions and very weak permanganate drinks have been regularly used at the Campbell Hospital, and the mortality has fallen to 34 per cent., against 64 per cent. in the same months of the previous year, the assistant surgeons in charge attributing the great improvement to these measures.

A new cholera ward at the Medical College Hospital was opened in April, 1909, and was placed under my care, thanks to the kindness of Surgeon-General C. P. Lukis, I.M.S. The blood pressure has been taken in every case on admission, and, as a rule, transfusion has only been performed if it has fallen to below 70 mm., which means a very feeble or no pulse at the wrist. All the other conditions have been the same, except the addition of the permanganate treatment in August, 1909, while 9 cases were treated with another similar oxidizing agent, namely, sodium peroxide. The latter drug was found, however, to be more irritating and less convenient for making into pills than permanganates. Experience has shown that the mortality among cases not requiring transfusion is very small and due to complications. The proportion of admissions requiring transfusion will, therefore, furnish the most reliable test of the severity of any series of cases, and the percentage of recoveries among those patients showing such serious collapse as to necessitate intravenous saline injections will give the clearest indication of the life-saving effect of any given treatment, for very few such cases recovered in Calcutta before the introduction of hypertonic transfusions by the writer in 1908. Tested in this way I find in the first place that during the last twelve months intravenous injections have been required in no less than 67 per cent. of the admissions, which is a larger proportion than at any previous period. The proportion of severe cases during the last year has, therefore, been actually higher than usual, so that the reduced mortality under the permanganate treatment is all the more striking.

We may next consider the mortality among the severe transfusion cases. During a year and a half of hypertonic injections without permanganates, the death-rate among 170 transfusion cases was 47 per cent., leaving 53 per cent. of recoveries. In the first year the precise blood pressure and other indications for transfusion were being worked

out, and a larger number of moderately severe cases were given intravenous salines than at later periods, cholera having been also somewhat milder in Calcutta in 1908 than usual. A fairer comparison would be obtained by taking the results in the new ward before and after the addition of permanganates under otherwise identical conditions. From April to July, 1909 (a season when the mortality is somewhat below the yearly average), 28 cases were transfused, with 46.4 per cent. of recoveries. Against this we have, during the last twelve months of permanganate treatment, 69 transfusions with 68.1 per cent. of recoveries, leaving only 31.9 per cent. of deaths in these serious cases. Such a result in the collapse stage of cholera, with a blood-pressure below 70 mm., speaks volumes for the new method.

An even more severe test may be obtained by considering the extremely severe cases requiring more than one transfusion, which is only exceptionally necessary with hypertonic solutions. Before the addition of permanganates, only 38 per cent. out of 50 such cases recovered. Since the toxin-destroying drug has been added, 15 out of 24, or 62 5 per cent. have been repeatedly saved from impending death.

Effect of the Permanganate Treatment in Different Periods of the Disease.

If my contention that the permanganates actually destroy some of the cholera toxins in the bowel is correct, then it should have most effect in those cases which come early under treatment. In testing this it is necessary to bear in mind that there is a marked variation in the mortality of the disease in relation to the time which has elapsed after the onset of the symptoms before admission to hospital. As some of the older Anglo-Indian writers have pointed out, and contrary to what at first sight might be expected, the mortality of cholera is highest among those coming under observation within the first twelve hours of the onset of the disease, and considerably lower among later admissions. It may rise again among patients coming after more than forty-eight hours, as these latter are commonly brought on account of the occurrence of the deadly uraemic complication. The simple explanation of these facts is that the more virulent the disease, the more rapidly collapse requiring removal to hospital will set in. Table III illustrates this point, the first line giving the results of cases treated by hypertonics alone, and the second similar figures for the last twelve months under permanganate treatment.

Table III.—*Relation of Period of Admission to Death-rate in Cholera.*

Hours after Onset:	Up to 12 Hours.			12 to 48 Hours.		
	Cases.	Deaths.	Per-centage	Cases.	Deaths.	Per-centage.
Hypertonic only ...	74	33	44 6	94	19	20.6
Hypertonic with permanganates	46	9	19.6	36	8	22 2

These figures are very striking, and show that the further reduction in the death-rate by the administration of permanganates is essentially due to their favourable action in the severe rapidly developing class of cases coming early under treatment—that is, just those whom early destruction of the toxins in the bowel might be expected to most benefit. In cases in which the disease develops slowly there is more time for the formation of antitoxins in the system as a result of the continued absorption of less overwhelming quantities of the poison. In these the hypertonic salines alone may raise and maintain the blood pressure sufficiently high to allow of rapid elimination to the toxins through the kidneys, thus preventing the accumulation of a fatal dose in the blood.

Again, if the toxins are really rendered harmless to any marked extent in the bowel, then a smaller number of patients admitted with a blood pressure over 70 mm. should subsequently collapse and require transfusion after they have been some hours under treatment in hospital. An analysis of my cases from this point of view shows with the hypertonic injections alone 21.5 per cent. of the transfusions were required for failure of the blood pressure some time after admission; while since the permanganates treatment was added only 12.8 per cent. of such cases have occurred, or but little over half as many. Moreover, in nearly all these the collapse came on within four hours of admission—that is, before the permanganates had time to fully act.

Proportion of Deaths at Different Period Stages of the Disease.

Among the 103 cases the 24 deaths were distributed as follows:

Collapse, 11; reaction with fever, 4; late uraemia, 7; other complications, 2; total, 24.

These figures may be compared with the deaths among 136 cases during 1907, before I introduced the use of hypertonic salines. The percentages then were:

Collapse and reaction stages, 46.3 per cent.; uraemia, 13.2 per cent.; total, 59.5 per cent.

The notes in 1907 were not sufficiently detailed to allow of a separate estimation of the deaths in the collapse and reaction stages, but it will be seen the combined figures are just over three times as high as those of the last twelve months, while the deaths to admissions from uraemia were twice as many. The present death-rate from uraemia of 6 8 per cent. is nearly as low as is likely to be reached, for 5 per cent. of all *post-mortem* subjects in Calcutta show some degree of organic disease of the kidneys, which would leave little or no chance of recovery from a severe attack of cholera. Three of the 7 fatal uraemic cases were in opium eaters—a significant fact. The reduction of the death-rate in the collapse and reaction stages to only 15 per cent. in the last year is very noteworthy, especially if we take into account the condition of admission of the fatal cases. Thus of the total twenty-four fatalities no less than eleven of the patients were admitted with absolutely no pulse to be felt at the wrist, so that the blood pressure could not even be estimated, and in three more it was less than 50 mm., the pulse only just being perceptible. Even such cases, however, are very far from being hopeless, for out of 36 pulseless cases in the last twelve months, no less than 21, or 58 per cent., were saved. Three of the fatal cases were of the very virulent haemorrhagic type and 2 had severe abdominal pain, which is a very bad prognostic sign. Still, I believe that with my present experience several more cases might have been saved, and I am hopeful that another year even 80 per cent. of the Calcutta Medical College cholera patients may possibly be saved.

Clinically the good effects are equally marked, and were particularly striking in several very severe cases, requiring two transfusions within a few hours. Formerly, in the rare occurrence of recovery in such patients, they remained in a critical condition, with marked toxaemic symptoms, for several days. With the permanganate treatment I have repeatedly been astonished to find such patients practically convalescent within twenty-four hours, and showing very little signs of the terrible ordeal through which they had passed. In ordinarily severe transfusion cases the copious rice-water stools become changed to small green evacuations in twelve to twenty-four hours of admission in collapse, in a manner formerly rarely observed. The number of comma bacilli in the stools becomes greatly reduced at the same time. Thus, everything points to permanganates having a definite specific curative action in cholera, and I have no hesitation in recommending its adoption as a routine method of treatment, in combination with hypertonic salines when necessary, as superior to any other therapeutical measure yet subjected to a prolonged and critical trial.

At the same time, I am very far from claiming the new treatment as an infallible remedy for cholera. On the contrary, the more I see of this terrible disease, the more fully I realize the impossibility of saving certain very virulent types, especially if brought late when a fatal dose of toxin has been absorbed. In the future, intravenous injections of a powerful anticholeraic serum may be available for their treatment, while I am about to try oxygen inhalations in the hope of destroying some of the toxins in the blood. Further improvement is most likely to result from these measures and from giving the permanganates in still larger doses than I have yet ventured to use. In trying my methods it should also be borne in mind that the mortality at the beginning of an epidemic is very much higher than at the end, or it may at once be con-

demned on account of its apparent failure in the early hopelessly severe cases, although, if persevered with, it can scarcely fail to reduce the total mortality in a parallel manner to the Calcutta results. Due allowance should also be made for the greater mortality in epidemics than among sporadic cases in an endemic area, such as Calcutta. Of course the permanganates alone will be of little or no use without the addition of hypertonic intravenous salines in those patients who come under observation in a state of marked or complete collapse.

In conclusion, I would point out that the clearest idea of the real life-saving effect of the new methods can be conveyed by the following consideration of the foregoing data. Since the new cholera ward has been open, and an assistant surgeon and a nurse have been available day and night (to whom I owe my best thanks for their ungrudging labours under trying conditions, to which so much of the success of my treatment is due), only 2 per cent. of the admissions have died without being transfused, including a young child in whom a large enough vein could not be found. During nearly three years' experience, 63 per cent. of the admissions have required intravenous injections. This leaves 37 per cent. of mild cases not passing into the collapse stage, 35 of whom might be expected to recover in any case. Now, in the eleven years preceding my investigations, during which intravenous salines were very rarely given, the total recovery-rate was 41 per cent. If cases not showing collapse were in the same proportion as latterly, then 35 of the 41 per cent. of recoveries must have been mild cases, leaving only 6 of the 63 per cent. of collapse cases who were saved, or just under 10 per cent. If we compare this figure with the recovery-rate of 68 per cent. in transfusion cases during the last twelve months, we obtain a seven-fold increase of the cures among severe and formerly nearly always fatal attacks of cholera. Such a result, obtained by a system of treatment based on a close investigation during several years by modern scientific methods of the blood and circulatory changes in cholera, is very gratifying, and should encourage the provision of greater facilities for research work in connexion with large hospitals in the tropics.

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NOTES ON CHOLERA.

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CONSTANTINOPLE.

CHOLERA reigns again in Russia. It has appeared in a sporadic form in several spots in Turkey, and cases have been reported from the northern provinces of Persia, especially Ardabile. Before long, many of the readers of the BRITISH MEDICAL JOURNAL may have the misfortune to face the disease for the first time in the East. I have, therefore, thought it useful to publish a few notes. I remember the cholera epidemic of Ispahan in 1869. I studied the disease in the cholera ward of the medical hospital of Bengal under the late Drs. Smith and S. Partridge during the years 1878–9 and 1880. I had much to do with the terrible epidemics of 1892 and 1903 in Teheran. Personally, and indirectly through my former pupils, I had perhaps more to do in the fight against it than any of my colleagues. My full notes, statistics, etc., are in Teheran; I cannot avail myself of their assistance. I shall mention only such points as have appeared to me new or suggestive.

Cholera is not one disease, since a series of many conditions differing very widely in their clinical features, and demanding different lines of treatment, are grouped under the name of cholera. The disease I saw in Calcutta was so mild as to look contemptibly ridiculous when placed side by side with the Persian form of it. The epidemic of 1892 was different from the epidemic of 1903; the last was dangerous mostly on account of the uraemic symptoms it produced early in the attack, rendering all preparations of opium, so useful in the epidemic of 1892, dangerous agents in the cholera of 1903.

It is impossible to determine the period of the occurrence of the first cases of cholera in a large city. Teheran was officially declared cholera-stricken at the end of June in 1892, but I have notes of mysterious cases of much earlier date. An old lady died about the end of May, 1892, after a short attack of vomiting, constipation, and uraemia. Later on during the cholera I saw many similar cases, and no doubt was left on my mind that this old lady died of cholera with unusual symptoms long before cholera was officially pronounced as existing in Teheran. The two epidemics I have watched in Teheran have generally run a course like this: The earlier cases were mild; most of them recovered by taking a few does of salol, benzo-naphthol, naphthol-β, salicylate or nitrate of bismuth, etc. I am sure any mild intelligent course of treatment would cure 80, 90, 95 per cent. of these cases; gradually the type of disease changed, severer forms became more frequent, until we reached a period of several days when nearly every one attacked by cholera was carried off rapidly. In 1892 this period lasted a week, in 1903 it was three days. Then the type of disease changed, without a diminution in the number of cases attacked; recoveries were seen, they became more frequent, and lastly, most of the cases recovered. In the same epidemic we can watch side by side widely different types of cholera. In 1892 Ekbaleh Saltaneh left Teheran during the epidemic with a host of his followers, and took refuge at Davoudieh, a garden of ten minutes' drive from the British village of Gulhak. I passed two nights among the cases at Davoudieh. Some brought a mild form of cholera from the town, and many who took cholera (I suppose from them) in Davoudieh had this mild form. But a niece of the gentleman took severe cholera in Tadjrishe, was carried to this garden, she became pulseless and black and died rapidly. Her father and a woman who nursed her, living, eating, and drinking, Persian fashion, freely with the patient, took cholera from her, became rapidly pulseless, livid, and died within ten to twelve hours of the attack. In all, 26 people took cholera in this camp, and only these three of Tadjrishe source were so severe, most of the other type of cholera running side by side with this recovered. The importance of drinking water was brought out again and again. In the epidemic of 1892 I published a brochure in Persian, wherein I stated the evidence of the propagation of cholera through water, and insisted on the boiling of drinking water. The Persians first laughed at this; Persian colleagues and priests on purpose had cholera subjects washed in running drinking water to disprove European theories. Some of the older school of European colleagues thought it wise to keep a close tongue. But facts are hard things. Persians saw how, on placing the springs of two dirty, wall-closed Armenian villages under strict control, we absolutely controlled the epidemic; only a few imported cases were seen in these villages, Dahrousse and Vanak. Meanwhile cholera was rife in the neighbouring royal camp and in all the Persian villages round under Persian, English, and Russian control. None could control the water so absolutely as the Armenian communities, because they had to deal with a different population. The Armenians were ready to take suggestions from Europe, willing to accept and act upon advice coming from us; the Persians opposed our ideas on the mere ground that they came from Europe. But gradually they saw hard facts; they then found that in their several writings and traditions it was stated that cholera spreads by drinking water. Appropriate sound texts were found or quoted, and in 1903 very few intelligent Persians took cholera. Every family of any note adopted the rule of using only boiled water for drinking, and although the type of disease in 1903 was very fatal, its total ravages were much less than in 1892, because many people had found out the secret of protecting themselves from it.

Cholera finds favourable conditions for its propagation in Oriental promiscuous living. In 1892, early one morning, Sapahdar, then one of the Bakthiari chiefs, passed through the Russian village of Zerghendeh to tell me to call on his family in Teheran. He had abandoned them and was moving to the mountains in the north. I arrived at his residence about 11 a.m., found twenty to thirty women and children grouped in one hall over their breakfast spread on the ground. Some were eating, others howling with cramps, others vomiting, all forms of intestinal and gastric filth spread on the same carpet from which this host fed most philosophically. No doubt visitors were received all day in the same hall, invited to

sit on the same infected carpet, and with their stockings and clothes they carried away more than they bargained. Faecal matter is carried about in the East from house to house by flies, and also by men who thus catch on their shoeless feet and long flowing robes what is abundantly supplied on soiled carpets and house floors. Promiscuous eating from the same dish directly with the hand is another dangerous practice. Russian workmen's families were literally swept off during the cholera of 1892; fifteen to twenty families had been brought to Teheran, and lived near the railway station. Ordinary Russians are less clean in their habits of life than Persians, and their poor families were swept off.

Flight during cholera causes fearful havoc in Persia. In 1892 the present Regent moved out of town with a numerous band of retainers. He infected a whole province and left forty of his followers dead on the road. Amine ol Molk, brother of the late Atabeg, moved out of Teheran during cholera. He infected four villages successively, and lost many retainers. On the other hand, the present Persian Premier and the present Governor of Ghilan moved out of town, on my advice, before the outbreak of the epidemic, and lost not one of their large following. Persian camps become literally slaughterhouses during cholera. With their ideas of conservancy, open latrines everywhere, and free pollution of all sources of water, cholera spreads like wildfire.

I consider all conglomeration of Persians as dangerous when there is risk of cholera, and I have ever been opposed to any quartering measures during cholera. Gatherings of Persian travellers become centres for the creation and propagation of cholera. I think this is true for all Eastern races without distinction of religion.

In the diagnosis of cholera great importance must be attached to a quick pulse. A normal or slow pulse would plead against the existence of cholera. Much straining or distinct blood in the stools would exclude a pure cholera attack. Absence of vomiting and absence of stools do not exclude the existence of cholera. The very worst cases die without these apparent and habitual symptoms. The thermometer should always be used; in the algid state a temperature of 96.4°, or below it, under the tongue is nearly always fatal. After death the temperature rises; in the rectum to 105°, or above it. During the existence of an epidemic of cholera many nervous men and women show symptoms of repeated vomiting and frequent abundant spitting and also diarrhoea, without having true cholera. The absence of brachial pulse is very grave; in the trinitrine, alcoholic solution of nitroglycerine, I have sometimes succeeded in restoring the pulse in such cases. I cannot say that in the final fatal result much has been gained by temporary appearance of the pulse. Pregnancy, unless very far advanced, does not add much to the gravity of cholera. I remember cases of recovery, when later on the pregnancy took its usual course. I certainly cannot follow the advice of some of the Continental authorities to empty the uterus quickly in all cases of cholera.

Young people and very old people do not take cholera to the same extent as middle-aged adults. I have seen cholera in both extremes of life, but still, in my experience it is people in the middle period of life who are specially prone to cholera. In the epidemic of 1869, people in Julfa, Ispahan, abandoned the delicious fruits in the numerous orchards about that suburb. We children partook freely of peaches, pears, nectarines, apricots, apples, etc. I do not remember a single case of cholera among a host of sinners. As children we thought it would be delightful to have cholera every year and have all the fruits left to ourselves. My later experience of 1892 and 1903 has confirmed the same impression; children during cholera may freely indulge in fruits that would be dangerous to their parents.

During the attack of cholera it is perfectly useless to insist on feeding the patient; the leathery shrivelled state of the skin suggests the existence of a similar state in the alimentary canal. Even after the period of reaction food must be given very carefully. Some of my younger colleagues insisted on early and abundant or frequent feeding in cholera, against the ancient accepted principle. I watched their experience and I found the results woful. Even days after cholera is over food must be given carefully to avoid relapses. In my experience few die from a second attack of cholera in the same epidemic. This suggests the idea that an attack of cholera gives temporary immunity against its lethal toxic effects. Many other facts support this idea. Eastern nations who have had dire experience of cholera tremble when, after an immunity of several years, they hear of the first cholera cases in a neighbouring town. They know that sooner or later they must have it and pay very dear for it. But once they have had their epidemic, paid their contribution to it, they attach no importance to sporadic cases occurring amongst them. They are not afraid of the reappearance of cholera amongst them by reinfection from a town that has been infected from them. Experience has taught them that cholera is sure to spread on virgin soil in a population that has been free from it for several years, and that it will not do much harm in a city where it has done its work recently. It is difficult to determine this period of immunity. In Persia the popular impression is that it is over ten years.

In an epidemic of cholera many take the disease in a mild form; a slight diarrhoea, much gurgling and uneasiness about the bowels, and loss of flesh are common phenomena during cholera years. It is possible that these symptoms mean a mild infection, which is sufficient to afford immunity. Possibly also boiled and filtered water and other hygienic measures tend to avoid infection from virulent cultures, and they procure a milder form of the disease sufficient for temporary protection. The late Professor Spencer of Edinburgh had quoted as evidences the remarkably good results of his operations done without any antiseptic precautions against microbial theories. He used to repeat as a joke that someone had replied that microbes must come in shoals to do harm, and in his cases they had not moved in shoals. Cholera microbes must move in armies, and in a special, virulent state of culture, to do any harm. Pure water, boiled or filtered, prevents this attack by an army, and gives us the chance of getting our immunity from milder enemies, found not in shoals but in less formidable numbers.

In the treatment of cholera many facts must be remembered. In each epidemic the road tending to death must be studied. When people get rapidly livid, opiates must be avoided. What is sufficient at the beginning or end of an epidemic is not of any use in the middle-period type of the disease. As a student I saw Dr. Smith use calomel invariably; Dr. S. Partridge ironically recommended rose-water. Both were mistaken; much can be done to save choleraic patients, but frequent 10-grain doses of calomel are not suitable remedies.

In the earlier milder cases I have found salol and benzonaphthol very useful. In the epidemic of 1892 I saved many by chlorodyne or laudanum, but in 1903 I could not use them freely on account of the early uraemic type of the disease. I remember many men living to-day who were near dying, and would probably have died, in spite of free use of salol, chlorodyne, etc., had I not resorted to the free use of creoline. I gave the liquid freshly dropped on flour—4 to 6 drops, rolled about in the flour by a stick, then turned on cigarette paper, gently enveloped in the paper, and swallowed. According to circumstances, I gave 4 to 6 doses of this bolus, repeating every second or third hour. I have read of others not having good results from creoline; some have pronounced it "horsy," but I am sure many would have died in 1892 who are alive to-day had I been afraid of using creoline. The drug must be used in the fresh state, as I described it. In many cases of inveterate diarrhoea also creoline has given me good results. I have used it frequently since 1892.

Preparations of ether, valerianate of ammonia, friction, counter-irritation, packing in hot towels, etc., are useful to bring about reaction, but the temperature must be carefully watched. Anything above 102° F. is already grave (in cholera), and not much should be done to bring about over-reaction.

I have tried the use of the physiological serum in small and abundant quantities, injected pints of it gradually or rapidly into the cellular tissues or into the peritoneal cavity. I have seen some patients saved by it; many others have died after even six or seven days of continual use of the serum. I think it tends to add to the danger of uraemic poisoning. I have frequently used a serum having much less sodium chlorate than the usual proportion. I cannot say this has given me better results. Some of my

Persian friends used large enemata of tannin solution with good results. I have frequently restored the absent pulse by alcoholic solutions of nitroglycerine, but the improvement has given no permanent solid results. Lactic acid is a good drink. I cannot say that it prevents or cures cholera. Plunging in cold water, into running streams, I have seen and have frequently tried with good results. But the man who can try it—has had the force to walk and the will to decide on taking a cold plunge—cannot be really in a critical condition. I have not had the courage to subject my really dangerous cases to cold hydropathic treatment.

I have seen severe forms of lead poisoning in people who had taken lead and opium pills for days to avoid taking cholera. Others become brighter by taking capsules of carbolic acid for weeks. None of my pupils and assistants took cholera. This I mention for the comfort of any of my young colleagues who have much to do with it for the first time.

In the East it will always be difficult to prevent, or check, the propagation of cholera. In Persia, what little organization exists in ordinary times melts away at the outbreak of cholera. The Shah, his ministers, governors, grandees, all resort to flight. Some of the older school of physicians also accompany these grandees, thus giving a bad example to younger and less experienced men. Persian ministers cannot be made to think of any useful general measures. In ordinary times it is narrow, short-sighted self-interest that guides all their actions. During an epidemic like cholera, all that is base and cowardly in men of this stamp comes out in all its ugliness. Hence we see choleraics abandoned in the street, numbers of the dead lying about on the main roads of the capital, hosts of moribund men and women hurried down in hired vehicles from villages into towns. This is done to prevent their dying without the city walls. A stupid rule excludes such bodies from the right of burial in the ordinary cemeteries. Before and during an epidemic volumes of necessary measures are submitted to the authorities. They like to request the advice of medical men of all nations as to what should be done. But they mean to gain time, have this report and that report, until the necessary forty to sixty days of the conflagration are over, and then they say, Thank God the evil is over; it is not necessary to take any special measures.

During the last epidemic the Persian Premier, the most intelligent man of his class, asked me to write a report. It would have been the fiftieth one had I written it. I requested him to give a general order to stop all men who work in the numerous canâts (underground springs of drinking water) to stop working during cholera. I thought this the first essential step to take. The next day I saw that the men who worked in the canât of the village where he resided for the summer had ceased working. He had taken immediate steps to prevent his own spring from pollution and his action finished there. There are over sixty of these canâts in and about Teheran; the rest he left to take their chance. I of course thought that I had already written sufficiently on the steps necessary for checking the spread of cholera in the empire of His Imperial Majesty the Shah of Persia.

DR. STARR JORDAN, President of the Leyland Stanford University, and also President of the American Eugenics group, has arranged to give an address on the colour problem in America on October 4th, at the invitation of the Eugenics Education Society. A limited number of free tickets are available on application to the Honorary Secretary, 6, York Buildings, Adelphi.

UNDER the will of the late Miss Emily Knowles of Worple Lodge, Epsom, the following hospitals each receives a bequest of £5,000: Charing Cross, the Middlesex, St. Mary's, University College Hospital, the London, the Cancer Hospital (Fulham Road), the Chelsea Hospital for Women, St. George's, the Royal Free Hospital, and Queen Charlotte's Hospital for Lying-in Women.

UNDER the will of the late Mr. Robert Grimshaw Dunville, chairman of the firm of whisky distillers of that name, the Victoria Hospital, Belfast, the Hospital for Sick Children, Queen Street, Belfast, and the Institution for Training Hospital Nurses, each receive a sum of £500.

SEVENTY-EIGHTH ANNUAL MEETING OF THE British Medical Association.

Held in London on July 22nd, 23rd, 25th, 26th, 27th, 28th, and 29th.

PROCEEDINGS OF SECTIONS.

SECTION OF DERMATOLOGY.

PHINEAS ABRAHAM, M.D., President.

PRESIDENT'S INTRODUCTORY REMARKS.

AFTER a few initial observations Dr. ABRAHAM said: You will observe that several of the subjects which are on this occasion to be brought under notice are comparatively new, and are at the present day occupying the minds of dermatologists throughout the world; most of them, indeed, may be said to be yet in the experimental stage. A great deal of patient observation and experiment have yet to be done; for instance, in connexion with vaccine therapy, *x*-ray, radium, and the freezing treatment of diseases of the skin.

All honour to the pioneers whose researches have widened our knowledge, and have given us these new and potent adjuncts to our therapeutical equipment; but, in our admiration at the brilliant results which have been in some cases effected by the employment of these novel methods, let us not forget that good results are also often obtainable with our old and well-tried remedies. I have heard it remarked by a flippant layman that "fashion seems to change in medicine as it does in bonnets," and there may be some element of truth in the cynical suggestion. We are, perhaps, a little too prone to rush from one form of treatment to another, because it is new, and to ignore for the time all past experience. A few years ago, for instance, and for a very few years, some of us attempted to employ the Finsen light treatment practically for all cases of lupus, and in many instances we wasted our patients' time and put them to enormous expense. We now know more about the limitations of the Finsen treatment; and in many cases of lupus I, for one, have gone back to the old Volkmann spoon and to other remedies which I am sure are more convenient and, in the cases referred to, more efficacious. So it is, I venture to submit (even at the risk of being considered retrograde), with some of the other recently introduced methods. Useful though they will doubtless prove to be in some cases, until we know their limitations and more about them we should be chary in employing them—except for purposes of avowed experiment—in those cases which we believe can be more easily and surely benefited by well known and safe measures.

With these few words—which may, perhaps, be regarded not only as a "plea for our good old remedies," but as a note of caution against coming to "hasty conclusions resting upon insufficient evidence," as a leader in the *Times* has put it, and thereby deserving the sarcastic censure of our non-medical critics—I declare the Section open.

DISCUSSION ON THE DIAGNOSIS AND TREATMENT OF SYPHILIS.

OPENING PAPER.

By ERNST J. FEIBES, M.D.,
Aix-la-Chapelle.

No branch of modern medicine has recently made greater progress than that of syphilography. Experimental investigations on animals have proved that the *Spirochaeta pallida* is the generator of the disease, and the presence of this organism in the lesions enables us to establish an early diagnosis, while at a later stage the serum reaction reveals the existence of syphilis in the body. These methods have enabled us to explain much that was

previously mysterious, and has made our knowledge of the disease more accurate.

Since Schaudinn's discovery of the *Spirochaeta pallida* it has been proved that it is constantly present in all manifest lesions of the disease, whether they be hereditary, acquired or experimental; the fact that it is not plentiful in late tertiary manifestations accounts for the general assumption that these lesions are not contagious.

Though no one has yet been able to grow the organism on artificial media, its constant presence at all stages of the disease and in all the products of the lesions prove it to be the real generator of syphilis. Formerly, where the primary lesions were not characteristic one was forced to leave the diagnosis open until swelling of the glands or the appearance of the roseola established the diagnosis, and much valuable time was lost.

The presence of the *Spirochaeta pallida* can be easily shown by any one familiar with the modern methods of demonstrating it; the silver-impregnation method of Lavaditi reveals it in sections of tissue; the dark field illumination method enables it and its characteristic movements to be seen *in vivo*. This simple method is carried out as follows: the lesion is rubbed with a piece of dry cotton-wool, and the serum obtained by means of a small Bier's sucker or by expression by means of a dissecting forceps, and immediately put on a slide and examined. The *Spirochaeta pallida* is recognized by its characteristic corkscrew shape and movements, and by its refraction of light, and with a little experience it can be easily distinguished from the *Spirochaeta refringens*. The dark ground method of examination is decidedly the best.

Schereschewsky's modification of Giemsa's method can be recommended for the examination of smears. The serum is thinly spread on a slide, and while still moist is fixed by exposure for thirty seconds to the vapour of a 1 per cent. solution of osmic acid then air-dried at 37°C., and passed three times through a flame; a 0·5 per cent. solution of glycerine, to each cubic centimetre of which one drop of Giemsa's solution has been added, is boiled and poured over the slide, the hot solution is left on the slide for two minutes, and the process repeated three times, and the slide then freely washed in running water. The spirochaete is beautifully shown stained a fine bluish-red colour.

Burr's method is easily executed, but is uncertain unless the organism is present in large numbers. A drop of the serum is placed on a slide and diluted with an equal quantity of distilled water; a drop of ordinary Indian ink is added, and the whole spread with a platinum wire, air-dried, and examined directly with an oil-immersion lens; the white, strongly refracting spirochaetes are seen on a dark grey background.

Meirowski of Cologne has recently described an expeditious method of beautifully displaying the spirochaete both stained and *in vivo*. The method is short, and is as follows: The spot to be examined is first cleaned with physiological solution of salt; then a freshly prepared paste of methyl-violet is thoroughly pressed on it with a glass rod and left *in situ* for two or three minutes, and some of the violet-stained serum removed with a small Bier's sucker, placed on a slide, diluted with distilled water, covered, and examined with an oil-immersion lens; the red blood cells and the ordinary bacteria are stained a deep blue, the *Spirochaeta pallida* is stained distinctly but of a light blue, and the *S. refringens* is distinguished by being much coarser; the corkscrew movements of the *pallida* are distinctly seen.

In cases where the *pallida* cannot be demonstrated we proceed to examine by Wassermann's serum reaction; in the beginning of syphilis this method frequently fails, unless general infection has already taken place, and it is only positive results that are of value at this stage.

The diagnosis of the specific character of the primary lesion having been made, the question of excision arises, although we know by Neisser's experiments with monkeys that the generalization of the poison occurs quickly. I still adopt the practice of cutting out the sore if this can be done easily and without mutilation, for the following reasons: First, the possibility of the prevention of the syphilis is not excluded; secondly, we diminish the number of spirochaetes; thirdly, we eliminate a dangerous source of infection; and, fourthly, we remove the site on which later manifestations of syphilis, such as chancre redux and tertiary lesions, tend to occur.

Formerly we used to delay general treatment until the roseola appeared. Neisser's proof of the early generalization of the virus, however, indicates that we ought at once to combat the disease with all our energy. Thus it may still be possible to obtain a real prevention of general infection, and such cases have been known where no further symptoms have occurred, and where the Wassermann reaction has remained negative, and other cases where, in consequence of early energetic treatment, the whole course of the disease has been extremely mild.

We have learnt that in the past our treatment has erred on the side of not being energetic enough, especially where the pill treatment has been adopted; I do not hesitate to state that a thorough mercurial treatment cannot be carried out with pills—the constitutional disturbances caused by this method precludes its being thorough. "Mercolint" and other mild methods useful as intermediate courses have to be rejected as a chief cure, and especially as a first cure. The early treatment must be as energetic as possible, and, where the symptoms are severe, must be pushed to the limit of physiological toleration This has been my practice for many years, and with the happiest results. I am glad to learn that this view has now become general, and that it is specially recommended by Neisser.

For a thorough mercurialization I am of opinion the method of "Schmierkur" (rubbings) is the most efficient; with no other treatment can we so thoroughly regulate the admission of mercury; we can stop it at a moment's notice, and easily prevent the discomforts and dangers of acute mercurial poisoning. How different is this with injections of insoluble mercurial preparations, which, when once injected, will go on producing their effect though the patient may be threatened with the worst!

I will shortly describe my treatment, carried out in many thousands of cases, and, as already mentioned, with the best results. The *procul negotiis* plays an important part; the course energetically and systematically carried out, the open air, the environment of a watering place, the devotion of the whole attention to the course, are all important factors; experienced rubbers relieve the patient of the drudgery of self-rubbing, the doses of mercurial ointment are gradually increased from 5 grams to 10 grams or more, and at the same time the area of the body to be rubbed is increased as well as the time of application; varied hydropathic applications, such as sulphur baths, douches, sulphur steam baths, and electric light baths, are valuable adjuncts. Frequent examination of the urine and heart enable us to proceed safely without producing injurious effects, and I have never seen any evil results produced by a properly conducted "Schmierkur"; and the results are extremely good, both in regard to relapses and in their effect on the Wassermann reaction, but it must be understood that such a course cannot be properly carried out while the patient is leading his ordinary business or social life; the quiet of a hospital or of a watering place is essential.

If for any reason the "Schmierkur" is inapplicable, injections of calomel may be recommended as being of equal value; their disadvantages are their painfulness, the risk of abscesses, and their danger in cases of idiosyncrasy. They are undoubtedly of great efficacy, especially as regards producing an effect quickly. Last year Neisser introduced a salt called "asurol," containing 40 per cent. of mercury, which is injected with grey oil, and does not precipitate albumen or cause irritation, and of which a large number of doses can be administered without risk of poisoning. A good new preparation (1907), worthy of mention, is atoxylate of mercury, introduced by Uhlenhuth, and which Lesser, Mickley, Blaschka, Faery, Boethke, and Lambkin have recommended, the good effects of it being attributed to the atoxyl as well as to the mercury. Zieler (Würzburg) reports adversely on its efficacy.

We now arrive at the consideration of treatment by arsenic. First, the cacodylic preparations were recommended, until these were superseded by atoxyl, owing to its curative effect on syphilis in monkeys. Lesser tried it in his hospital. At first the results were bad, owing to insufficient dosage. The doses were raised and the results, even in severe syphilis, were exceedingly good, but before long results were published indicating grave danger

in the use of this drug—blindness and other mishaps were reported, and relapses were frequent. Atoxyl was then displaced in favour of arsacetin, recommended by Ehrlich. This was said to be less poisonous, but blindness has also occurred with this salt, and it is not so efficacious as atoxyl. Other preparations also have been introduced, such as arseno phenyl glycin and the so-called Hata preparation, or dioxy-diamido-arseno-benzol, recommended by Ehrlich. Remarkable results are reported, but the cases treated by the Hata preparation are so far too few and the time that has elapsed too short to enable definite conclusions to be drawn in regard to its safety and efficacy. Whether these aspirations of Ehrlich in regard to the *therapia magna sterilans* will be realized must be left for the future to decide. It is to be much regretted that the ordinary newspapers have occupied themselves so much in discussing this treatment before its exact effects have been ascertained.

We now come to the consideration of the iodide treatment, which is certainly one which cannot be despised; many life-saving effects have been produced by large and increasing doses of iodides, and I published some years ago magnificent successes obtained by iodipin, especially in tertiary affections; other useful preparations of iodine are iodglidin, sajodin, iodtropon, and others. As to the general lines of the treatment of syphilis, we recommend to-day, as we did formerly, the intermittent treatment, without waiting for relapses, and whether the Wassermann reaction is negative or positive, as we cannot yet count on a reliable and complete early cure, though we must differentiate between those cases where early treatment produces permanent negativity as regards Wassermann's reaction and those cases in which the positive reaction persists in spite of the most energetic treatment. Such cases are rare; I have observed four where the severest and most prolonged courses with mercury and iodide did not bring on negativity; after a year's treatment, however, they became negative. Such cases must be treated with the greatest energy, even if symptoms are absent; it is only in this way that they can be successfully protected from the severest and worst consequences.

To judge of the value of a positive Wassermann reaction in regard to therapeutical indications, we have to decide whether it indicates immunity due to a past syphilis or a still persistent syphilis. Clinical evidence points to the latter conclusion. Meirowsky has observed three cases where husbands who had suffered from syphilis infected their wives, although at the time of infection no symptoms were present, but the Wassermann reaction was positive. In these cases the positive Wassermann reaction indicated not a past syphilis but a persistent syphilis, and that these men must have still been carriers of spirochaetes.

Often enough one hears of cases who, fifteen, twenty, or more years ago, have had syphilis, and still give a positive reaction in spite of the absence of symptoms and the production of healthy children. In this connexion we must bear in mind that visceral syphilis often escapes detection, syphilitic lesions are frequently discovered *post mortem* which gave rise to no symptoms during life, and Lesser found in necropsies on syphilitic subjects that 50 per cent. of them presented signs of their old syphilis, such as gumma in the liver, scars of the testicles, and changes in the aorta. If the reaction is positive, syphilis is still present, and in such cases a positive reaction can be converted into a negative one by energetic and appropriate treatment. A positive reaction must be regarded as a symptom of syphilis. One of the chief results of Neisser's expeditions to Java was the observation that there is no real immunity against syphilis, and that seeming immunity only means the continued presence of the disease. This indicates the necessity of arranging therapeutic measures in the late syphilitic stages according to the indications of the Wassermann reaction, so as to prevent the threatening consequences, be they general paralysis or tabes, and, if possible, by energetic measures to change the positive into a negative reaction.

DISCUSSION.

Mr. J. ERNEST LANE (London) deprecated being bound to any one system of treatment when dealing with such a complex disorder as syphilis. Each case should be treated on its merits, and one should not be restricted to any routine plan. In a large proportion of cases treatment by pills was eminently satisfactory; it had the merit of being simple, convenient, and inexpensive, and could be carried out by the patient himself without the constant intervention of the surgeon or the masseur. The tendency at the present time was to prolong the period of treatment over five, or even seven, years, and the majority of patients would not submit themselves to courses of inunction or injections for such a protracted period. It would probably be considered a heresy to advocate the treatment of syphilis by such a simple method as by pills, but he was not altogether without experience of other plans, such as inunction, intramuscular injections, fumigations, the arylarsonates, and even the *dernier cri* in the treatment of disease—namely, Ehrlich's new preparation known as "Hata"—and in the majority of mild and uncomplicated cases he found treatment by the mouth was perfectly satisfactory. The less irksome and inconvenient the treatment, the more likely the patient was to continue it for the requisite period—a point in favour of oral treatment. Obviously this was not appropriate in every case of syphilis, and it was certainly contraindicated in patients with impaired digestion, or where it was advisable to administer other remedies by the stomach; in cases of some rapidly spreading and destructive lesion; in cases such as cerebral, spinal, or visceral syphilis. In conditions such as these more drastic measures were required. First and foremost, from the point of efficacy, he would place intramuscular injections of calomel—by far the most reliable remedy at our disposal on account of its energy and the rapidity of its action. Like every other plan it had its disadvantages, which appeared to the speaker to be considerably exaggerated, for, in an experience of over 3,000 injections, he had never met with any more serious disaster than gluteal abscess, which occurred in four cases, but speedily yielded to treatment. Inunction treatment was decidedly inferior to intramuscular injections, as it was unreliable and unequal in its action; it involved the employment of a skilled rubber; it was often productive of severe stomatitis, of enteritis and dermatitis; it entailed publicity, and, further, was repugnant to the feelings of the aesthetic patient. He had had considerable experience with treatment by the arylarsonates, but had abandoned them owing to the danger of blindness caused by those preparations. Of Ehrlich's "Hata" he had not yet had sufficient experience to pronounce upon it.

Dr. R. B. WILD (Manchester), speaking of the treatment of syphilis from the pharmacological aspect, said that no matter in what form or by what channel mercury was given it was converted into a soluble double salt with sodium chloride and albumen, as such it circulated, and was deposited, especially in the liver, until excretion was complete. The nearest and least harmful path to the liver was undoubtedly by the stomach and duodenum, and for the treatment of 90 per cent. of the cases of syphilis administration by the alimentary canal was the most useful and the best method of treatment. For the remainder of the cases, inunction or intramuscular injections might be used. The former was both efficacious and rapid, the chief objection being the intermittency of the courses of treatment, which at most could only be carried out twice a year. The intramuscular method was painful and might be dangerous, but the tendency was to give in this way a very small amount of mercury, possibly too little in any case; and the speaker had seen in recent years cases of tertiary syphilis in ex-soldiers who had been treated by injection some years previously. The really important point in the treatment of syphilis was the prevention of tertiary lesions. Mercury was the essential drug to use, and it mattered little what method was employed so long as it was efficient and sufficiently long continued. As regards the arsenical compounds, the value of arsenic with mercury in the form of Donovan's solution had long been recognized, but there was as yet no proof that arsenic would in any way prevent the incidence of tertiaries. The new organic compounds of arsenic were still in the experimental stage, and the speaker had seen nervous symptoms follow their administration. Some years must elapse before the value of these newer methods of treatment in preventing tertiary lesions could be determined. The Wassermann reaction must also still be regarded as in the experimental stage with regard to therapeutic indications.

Dr. George Pernet (London) said that in his opinion pill treatment was inadequate, and considering the large number of late syphilis cases, that method had failed. He admitted that inunction was valuable. But he desired to lay special stress on intramuscular injections, both of insoluble and soluble preparations, which gave such good results. Calomel came first, and in serious complications was a sovereign remedy. Grey oil was also very useful, though less potent than calomel. It was important to inject insoluble preparations of mercury in two movements. As to soluble preparations, he had found benzoate of mercury of decided value. In order to test a patient it was sometimes advisable to begin with soluble and then go on with insoluble preparations. He desired to emphasize that cases for intramuscular treatment should be selected. It was not a routine treatment. Every case of syphilis should be dealt with strictly on its own individual merits, and the patient's teeth put in order before commencing a course of treatment. This could not be repeated too often. Of course iodides were valuable, especially in patients over 40, when it was important to protect the arterial system, but in healthy young adults the *routine* exhibition of iodides was not necessary. Iodipin and lipiodol in intramuscular injections were also serviceable in some cases. Atoxyl and some other arsenical compounds had been shown to be without curative effects, and could not be ranked with mercury, which remained the specific, unless it became dethroned by Professor Ehrlich's "606" preparation. The latter, also known as "Hata," certainly appeared to be very potent, but more experimental work was required before passing final judgement. Moreover, contrary to what had been found regarding atoxyl, the new compound, "606," did not appear to affect the ocular nerve. Dr. Pernet had recently employed hectine (an arsenical compound), which appeared to be safer than atoxyl, and was useful when, for some reason or another, mercury had to be suspended. The study of syphilis was neglected in this country. There was no systematic teaching relating to a disease that directly or indirectly led to such a large morbidity. It was really a national concern, and it was high time the subject should be dealt with systematically and occupy its proper place in the curriculum of all medical schools.

Mr. J. E. R. McDonagh (London), on the suggestion of the President, read, as his contribution to the discussion, a paper which will be found at p. 846.

Dr. G. Stopford Taylor (Liverpool) invariably treated his cases of syphilis with injections of grey oil, but combined mercurial inunction when the secondary symptoms were severe, and until they disappeared, relying upon injections until cure was effected. Each course consisted of ten or twelve injections of 7 cg. In the intervals he gave short courses of potassium iodide. The frequency of injections of grey oil depended upon symptoms. He had been surprised at the smallness of the dose and at the infrequency of injections required to cause the disappearance of all objective symptoms of syphilis. The advantages of injections were that the patient was kept under the observation of the doctor, and consequently observed those rules which were so essential to his recovery. By the oral method it was otherwise, and he had frequently seen cases which had failed to improve until injections were resorted to. The objections raised by Dr. Wild against this treatment in the army might apply to any other method, as it was always a difficult matter to impress upon patients the absolute necessity of keeping under treatment. Amongst hospital patients women often appeared with tertiary lesions who had no knowledge of having had primary or secondary syphilis.

Dr. J. Goodwin Tomkinson (Glasgow), while not altogether abandoning the oral administration of specific remedies, endeavoured to practise soluble mercurial injections in all refractory cases—in fact, in as many cases as circumstances would allow. His preference for the soluble salts of mercury was owing to the ease with which the toxic effects of the drug could be controlled—virtually immediately on ceasing the injections. This could not be said of the insoluble salts. It had been adduced by Mr. Lane that an objection to the injection method was the necessity for the patient systematically to visit his physician. He ventured to think that one of its great advantages was that it was carried out by the physician himself, for doubtless the oral method was not infrequently inadequate owing to the patient's neglect to carry out the treatment prescribed. Apart from this, it must be admitted that the injection method had proved itself more efficacious than the oral. The inunction method appeared to him to be an offence against one's aesthetic taste. There was no doubt that the treatment of syphilis should be a protracted one; but how difficult it was to ensure this in hospital practice, where it was no unusual thing for a patient to disappear at the same time as the rash! Would not this be obviated by compulsory notification of the disease?

Dr. William Griffith (London) recalled that Major French had stated that 26 deaths following treatment by intramuscular injections were on record. This treatment had not yet shown its superiority over inunction or giving pills per os, and in the vast majority of cases oral administration was eminently satisfactory.

Dr. Alfred Eddowes (London) advocated treating the disease locally wherever possible. He used mercurial ointments to all syphilitic eruptions, early or late, limited locally or generalized, in addition to all other methods in use. For late nodular syphilides he considered mercurial plasters more useful than ointments.

Dr. Douglas Heath (Birmingham) had been in the habit of using the inunction treatment for many years, even in the treatment of malignant syphilis. He had never found it to fail even in the most severe cases. He usually diluted the mercurial ointment with ung. aq. rosae (*B.P.*), and found in this way that dermatitis was avoided. He found that hospital patients would carry out the treatment if the essentials were impressed upon them, and that subsequently a pill treatment could be employed. For late manifestations he generally gave a course of inunction at once together with iodides.

A CASE OF PITYRIASIS RUBRA PILARIS, WITH REMARKS ON THE ETIOLOGY OF THIS AFFECTION.

By J. Goodwin Tomkinson, M.D.,

Physician for Skin Diseases to the Dispensary at the Glasgow Western Infirmary; Medical Electrician, Glasgow Western Infirmary; Dermatologist, Glasgow Hospital for Diseases of the Ear, Throat, and Nose.

[*With Special Plate.*]

The rareness of this affection, coupled in this particular case with certain features of clinical and possibly etiological interest, is my excuse for submitting this report to the Dermatological Section.

On December 10th, 1909, I had the pleasure of showing this case at a meeting of the Glasgow Medico-Chirurgical Society held in Glasgow Western Infirmary. The following is a brief report made at that time:

H. T., aged 30, lithographic stone polisher. Family history uninteresting. Patient states that sixteen years ago, after commencing work as a lithographic stone polisher, the palms of his hands became red and thickened. Seven months ago follicular papules appeared on the proximal phalanges of the fingers of both hands, later on the middle phalanges of the third and fourth fingers, and subsequently on the back of the hands, affecting in the main the skin over the first, second, and fifth metacarpal bones. Later, the fronts of the wrists, the outer aspects of the forearms, and the backs of the elbows became affected.

On examination, in addition to the lesions already mentioned, isolated follicular papules are seen on the lower abdomen. Large horny, dark grey follicular papules are conspicuous over the dorsal convexity of the spine, extending laterally. In the summit of the intergluteal fold—namely, over the sacrum—the papules are closely aggregated, presenting a somewhat verrucose appearance, and a similar condition is present over both ischial tuberosities. The knees are similarly but not so markedly affected, and there is some hyperkeratosis where the boot is laced. The soles are erythematous, the neighbourhood of the heels markedly hyperkeratotic, as is also the centre of the right sole. The forehead is slightly erythematous, but no scaling is observed. The upper half of the bridge of the nose shows telangiectases. A few comedones are present on the face, and also on the back of the neck. The scalp is scaly but not markedly. The affected areas of hands, fingers, intergluteal fold, and ischial tuberosities are slightly but definitely erythematous,

TO ILLUSTRATE DR. J. GOODWIN TOMKINSON'S PAPER ON PITYRIASIS RUBRA PILARIS

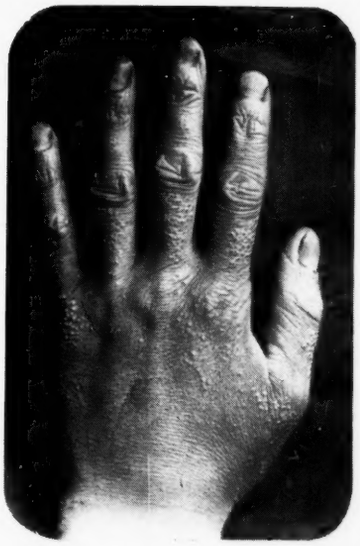
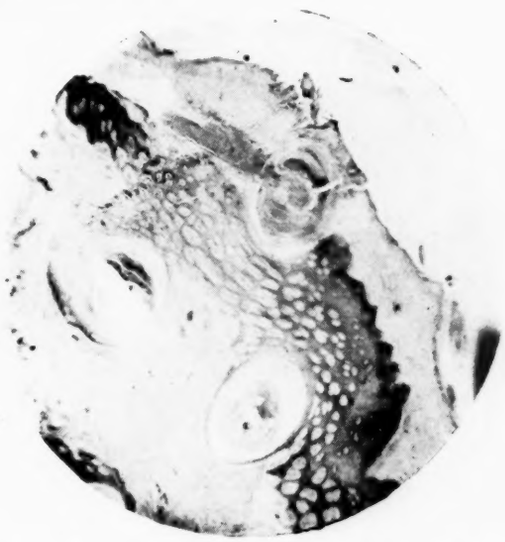


Fig. 1.—Back of left hand, showing characteristic distribution of follicular papules; also the tendency to terminal bending of the nails towards the palm.

Fig. 2.—Palmar surface of left hand, showing epidermal thickening and some fissuring. Thickening most marked at base of palm, where soft tissues are thinner and occupational pressure probably greater owing to closer proximity of skeletal tissue.

Fig. 5.—Fronts of legs. The knees show some coalescence of papules, but the photograph does not bring this out very prominently (pressure points); varicose veins and evidence of previous rickets.



Figs. 6 and 7.—Photomicrographs of section of skin from back of right hand, showing epidermal thickening, well marked about the hair follicles, and forming the epidermal plugs.

and there is a suspicion of erythema on the mid-dorsal region of the trunk. The erythema appears to begin perifollicularly and spread laterally until neighbouring specific centres of origin have coalesced into one continuous patch. The finger nails are longitudinally striated. The papules throughout are distinctly follicular and contain a central horny cone. Their predominating tint is greyish, but gives the impression of being much deeper on the hands, owing to the central hairs being decidedly darker in colour. On passing the hand over the lesions a distinct grating sensation is experienced. The patient is tattooed on the left forearm, the device being two clasped hands, male and female, above a heart; above these a star, on either side of which is a spirillum-like device; beneath all the words "True Love."

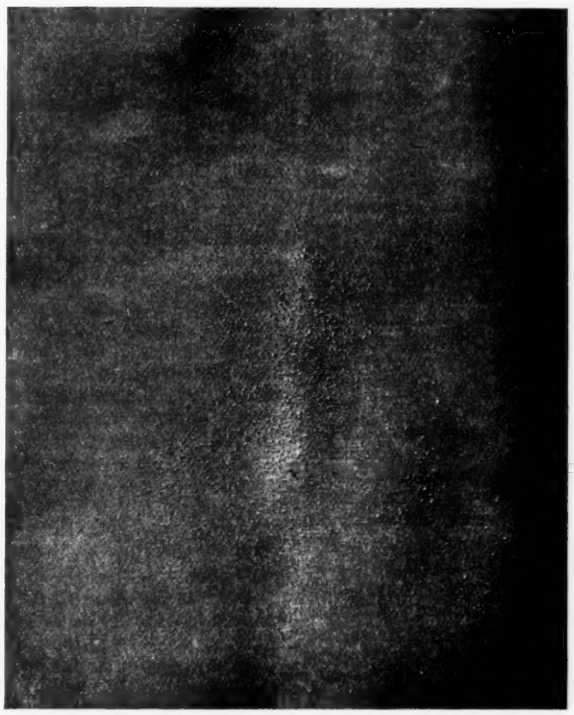


Fig. 3.—Back of trunk showing follicular papulation over dorsal convexity of spine, etc. (pressure points).

On July 22nd, 1910, the patient came to the Western Infirmary, having been sent for in order that a biopsy might be made. The following additional notes were then taken:

Palms erythematous and thickened, being definitely hyperkeratotic at centre of base and about the natural lines of the digital flexures. The nails tend to bend over the finger ends, more particularly those of the left hand. They are also longitudinally ridged, and under their free edge there are accumulations — possibly epidermic. In addition to the pronounced papules in the mid-dorsal region of the trunk, recorded in a previous note, the remainder of the back exhibits a generalized finer follicular papulation. In contrast with this the papules are less pronounced, than previously recorded, on the outer aspect of the forearms and lower abomen. The lumbar region shows fine silvery furfuraceous desquamation. The eruptive elements over the ischial tuberosities and summit of the intergluteal fold have coalesced in these regions, and show thick adherent greyish-yellow scales. There are plaques of coalesced eruption in the patellar regions similar to, but less pronounced than, those just recorded over the ischial tuberosities. On the shoulders where the braces are supported, and chiefly on the right side, there is increased papulation as compared with contiguous parts. While on the soles of the feet there are hyperkeratotic areas where pressure is exerted, there is indubitable epidermal hypertrophy where little or no pressure acts. Scaliness of the scalp, while not excessively pronounced, is quite evident, and appears to be most marked about the pilo-sebaceous orifices. The hair of the scalp, beyond slight thinning on the vertex, does not appear to have suffered. There is entire absence of itching and other subjective symptoms. The general health is good, and the urine normal. The patient's tibiae, however, show rachitic deformity, and varicose veins are prominent on both legs.

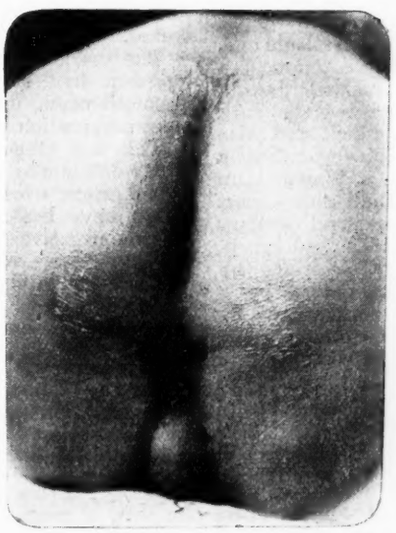


Fig. 4.—Region of sacrum and ischial tuberosities showing more or less coalescence of follicular papular elements (pressure points).

Histological examination of a section of skin taken from an affected area of the right hand revealed hypertrophy of the corneous and mucous layers of the epidermis. This was especially well marked in the region of the hair follicles where the hairs are ensheathed by horny accumulations of the hypertrophied lining of their follicles. Here and there the dermis showed slight infiltration.

With respect to the etiology of this affection, my friend and master, Professor Gaucher, remarks in his volume *Maladies de la peau*, of Brouardel and Thoinot's *Nouveau Traité de Médecine et de Thérapeutique:* "I have twice seen patients whom I had treated for pityriasis rubra pilaris, and who were cured succumb some years later to pulmonary tuberculosis. This was, without doubt, more than a mere coincidence, for Milian has just shown that patients exhibiting pityriasis rubra pilaris, even in apparently good health, react to tuberculin. This affection would, then, be of tuberculous origin." In this case I have not applied any tuberculin test, nor have I yet examined the blood.

According to the patient's story, the first evidence of the disease was on the palms after commencing work as a lithographic stone polisher. Last week I visited the printing offices of a well-known Glasgow printer and lithographer, and, owing to his kindness, saw a lithographic stone polisher at work. The actual lithographic stone is a slab of limestone. It is first polished with coarse sand, then with a polishing stone of grey sandstone, afterwards with a stone called "water of Ayr" or snake stone. Finally, the application of an aqueous solution of nitric acid and gum arabic completes the process. Sometimes the lithographic stone is replaced by a zinc or aluminium plate. During the process of polishing, the lithographic stone is supported on a widely fenestrated wooden frame over a tank of water into which the polisher is constantly dipping his hands and the polishing stones. The aqueous solution of nitric acid and gum arabic is applied on a sponge or cloth by hand, but, in so far as I ascertained at the time, not by the stone polisher, but by another artisan. While watching the process of polishing I endeavoured closely to scrutinize the polisher's hands, but failed to detect anything abnormal in the appearance of the parts that were visible.

It will be recalled that the lesions in this case are in the main much more pronounced in regions of pressure—namely, over the ischial tuberosities, the lower end of the sacrum, the dorsal convexity of the spinal column, the elbows and outer forearms—sites pressed upon in the sitting posture—on the shoulders where the braces are supported, more marked on the right one, due doubtless to the more frequent use of the right arm and the higher bracing of the right side to bring the fork of the trousers into the right scroto-crural interval. The occupational pressure on the palms is obvious, as is also the pressure on the soles of the feet, the front of the ankle, and the knee.

Without, perhaps, throwing any light upon the ultimate etiological factors in the disease, these clinical signs doubtless point to pressure as a determining or accessory agent in the development at least of some of the lesions in this and, perhaps, on closer observation, in other cases but nothing more, otherwise pityriasis rubra pilaris could be by no means a rare affection. Doubtless the actual cause must be sought for internally. It will be remembered that the palmar condition commenced at the age of 14 and that an interval of about fifteen years elapsed, according to the patient's statement, before the development of follicular papules. Stelwagon observes "it (pityriasis

rubra pilaris) has its origin in the majority of cases in childhood or early youth." Might not this suggest some, as yet undiscovered, congenital deficiency in the cutaneous tissues, and the increased cornification a protective effort on the part of Nature?

The patient has had virtually no treatment owing to disinclination to attend the infirmary.

SERUM DIAGNOSIS OF SYPHILIS.

By J. E. R. McDONAGH, F.R.C.S.

WITHOUT troubling you with the technique of Wassermann's reaction, with which you are all so familiar, I will straight away give my own experience of the same. My first step which modified the reaction was to use the patient's serum active, instead of inactive, and as I have shown in the *Practitioner*, 1909, vol. lxxxiii, p. 307, the results obtained in testing the serums, both active and inactive, showed the reaction to be somewhat more sensitive in the former than the latter, but too great stress cannot be laid upon the point of time at which the serums are tested. Forty-eight hours should elapse before a serum is tested, as by this time all the complement present will have disappeared.

The reason why I advocated the use of active serum as well as inactive, both of which I always used, one serving as a control against the other, was owing to the fact that in inactivating the serum complementoid bodies are formed causing a negative result in a serum which should have given a positive one. Wechselmann got over this difficulty by precipitating these complementoid bodies with barium sulphate, and using the filtered serum made the reaction considerably more sensitive than Wassermann's original, but it unfortunately increases the labour; be that as it may, if the positive reactions in undoubted cases of syphilis are increased thereby, the value of a negative reaction will be much greater, and as I have obtained better results with Wechselmann's method than by employing active serums, I always use the former.

One point of the greatest practical importance I should like to draw attention to. If a serum is kept, as happened recently in two cases of mine, for a week, especially if not pipetted off from the corpuscles, it has the power of fixing complement alone; such a serum has been designated autotropic. An autotropic serum can invariably be recognized, because, in the control tube when haemolysis should be complete in every case, no haemolysis occurs.

Practical Application of the Reaction.

Owing to the fact that a positive reaction is not given in the primary stage of syphilis in more than about 40 per cent. of cases until the disease has become a systemic one, no reliance can be based upon a negative reaction, if a doubtful sore is in question. Since the *Spirochaeta pallida* can be invariably demonstrated by means of the dark ground illumination, the Indian ink method, and also Meirowsky's methyl violet procedure in the serum from a specific sore, it can be readily seen that a Wassermann reaction is unnecessary at this stage. I shall now depart from the old classification of secondary and tertiary syphilis and divide the cases into early, late, and latent, that is, those showing no signs. In "early" I include the primary rash and the train of symptoms caused by a general infection, such as headache, sore throat, etc. By "late" I include any recrudescent rashes and gummata, and the special group called "parasyphilis," to which belong tabes and general paralysis of the insane. In the early and late syphilides I have obtained a positive reaction in 97 per cent. from over 5,000 cases. This positive reaction can be converted into a negative one in early syphilis, but in many of the cases of late syphilis the disease has reached such a condition that it is impossible to eliminate the syphilitic poison by means of our present antisyphilitic remedies. In latent syphilis the percentage of positive results is very considerably diminished. Early in the disease a positive result means insufficient treatment; late in the disease it may mean that the patient is suffering from some visceral lesion dependent upon syphilis, such as general arterio-sclerosis, aneurysm, aortic disease, or a gumma in an internal organ. By prolonging treatment, a positive result in the former can be changed into a negative one, but not so in the latter.

This brings me, then, to discuss the influence of treatment upon the reaction. From what I have already said it is clear that mercury has the power of changing the reaction early in the disease, but not late. Therefore, first and foremost, a patient diagnosed as being syphilitic, say from a positive spirochaete examination in the serum of a sore, should, before the disease has become generalized, receive the most active and vigorous form of treatment possible. Mercury, in the form of inunctions, is more potent in this respect than when given in any other form. Injections come next in importance, and pills least of all. This fact was very strikingly brought home to me in the following way: Working at the Wassermann reaction on the Continent, I found that it was almost a rule to obtain a negative reaction after a patient had had a course of inunctions, or, less frequently, injections. On my return to England I tested several cases in which patients had taken internal treatment for two, three, or four years, at the end of which the reaction was usually positive. At the same time I was struck by the frequency of syphilitic tongues one met with in England compared to abroad. I managed to get a series of cases all of which gave a positive reaction, although many of them had taken pills for a number of years, and at the time internal treatment was being further pushed. I have shown in the *Lancet*, 1910, vol. clxxviii, p. 920, what I consider to be the relationship between syphilitic buccal affections and internal administration of mercury. In tabes a positive reaction is given in about 60 per cent. of cases, and in general paralysis of the insane in 100 per cent. These figures with the cerebro-spinal fluid are not so constant, and when a positive result is given and tested quantitatively, not so much complement is absorbed.

Ought we to treat every case giving a positive reaction? The answer may be in the affirmative. Although it may not cure the patient in the late stages of the disease, it will probably stop its further progress. The treatment should invariably be mercurial, supplemented by potassium iodide; the latter alone should never be relied upon, since it has no power in changing the reaction.

Although the Wassermann reaction has aided us considerably in the form of treatment we should adopt, it is not yet so infallible as to say how long the treatment should be continued; so until this problem is solved we ought to adhere to the old three years' régime; after that time, if a negative reaction is given three, six, and nine months consecutively, one will not go far wrong in stating that the patient is cured. A negative reaction obtained either while the patient is taking mercury or has finished his course of treatment is valueless, owing to the action of mercury, as mentioned above. At least six weeks should elapse after last taking mercury before the blood is tested.

The marked influence which treatment has upon the reaction has been very clearly shown in about 200 reported cases, in which after one injection of Ehrlich's new preparation a negative reaction was obtained.

This new preparation, or Ehrlich-Hata's No. 606, is a dioxy-diamido-arseno-benzol, and after one injection of 6 to 8 grains even the severest late syphilitic manifestations have healed up, and the Wassermann reaction become negative, a result which was unobtainable, however much mercury was being used. Geheimrat Professor Ehrlich has been so kind as to send me some of this drug to try for him at the Lock Hospital, and I have now under my care cases of both early and late syphilis, cases which have had no mercury, and others which have been treated without any benefit, a report on which I shall soon look forward to giving you. (See *Lancet*, September 3rd, 1910.)

Syphilis in Women.

Syphilis in women is not usually so manifest as in men; especially is this the case during the child-bearing period; in fact, a woman may give birth to several syphilitic children without herself showing the slightest sign of the disease or giving the history of such; and such women, as I demonstrated before the Royal Society of Medicine (*Proceedings*, 1910, vol. iii, No. 7, p. 90), are particularly prone to develop gummata at or about the menopause. The mother of a syphilitic child, whether she shows symptoms or not, usually gives a positive reaction; therefore every suspected woman should be examined by means of this test, and if a positive result is obtained, should be treated with mercury throughout the whole time of each successive pregnancy, so increasing the chances of

begetting a normal child. Against this, the question always arises as to what proof we have that treating the mother affects the offspring. The best answer to this is that congenital syphilis is not only less frequent but also a milder disease in private patients than in hospital patients, since the former are more rigorously treated. Treatment of a syphilitic father should also not be omitted, as is so frequently done.

Congenital Syphilis.

The reaction in congenital syphilis is peculiar in many respects. First, it is usually a very strong one; secondly, mercury seems to have very little influence upon it, which is not unreasonable considering the disease has grown with the child, the tissues being saturated with the poison, so that the blood reacts just as in a case of late acquired syphilis. It is unfortunate that mercury has not the same influence upon changing the reaction as in acquired syphilis, since we cannot lay down rules as to how long a congenital syphilitic should be treated. If the mother is known to be syphilitic, and she begets a child who shows no symptoms of the disease, this child's blood should be invariably tested, and if the reaction is positive, a two or three years' treatment of mercury should be resorted to. If this were invariably done, there is no doubt that cases of juvenile paralysis, double interstitial keratitis, etc., would be much rarer, since these late phenomena of congenital syphilis are not infrequently the first.

Life Insurance.

Wassermann's reaction is now entitled to play an important rôle in determining the knotty problems of life insurance. A candidate with a recent history or with previous manifestations of syphilis is, according to present custom, rejected or deferred by most offices. This is sound business, but the facts and conclusions cited above justify a closer scrutiny in all syphilitic cases.

A candidate giving a positive reaction, even though years may have elapsed since the original infection, should be regarded as ineligible, for such a result usually signifies the presence of a visceral lesion that will ultimately shorten life. The virus has obtained such a firm hold that treatment, while capable of checking its course, can never thoroughly get rid of it. Furthermore, a candidate yielding a positive reaction after shorter lapses of time—say three years from the date of the primary lesion—should be received with caution, for this usually denotes that the early treatment of the patient has been insufficient, with consequent liability to the later manifestations of the disease.

On the other hand, a candidate may be accepted who, having completed a two years' course of treatment, shows a negative reaction on being tested at intervals of three, six, and nine months after such a course. The influence of syphilis on his chances of life may then be safely discounted. In no case is acceptance warrantable until two years have elapsed since the original infection.

ON THE VALUE OF A RICE DIET IN CERTAIN ACUTE DISEASES OF THE SKIN.

By L. DUNCAN BULKLEY, A.M., M.D.,

Physician to the New York Skin and Cancer Hospital; Consulting Physician to the New York Hospital.

THE purpose of this communication is to call attention to the importance of the dietary element in connexion with the treatment of certain affections of the skin and to emphasize the value of one particular diet.

There can be no question but that local causes play a prominent part in the production of many skin lesions, and that the full extent of the influence of local parasitism has not by any means been yet clearly defined. From the results of vaccine-therapy it would seem that we are also only beginning to understand the important rôle which micro-organisms within the system can play in connexion with lesions on the skin.

But some thoughtful physicians are still seeking to know why it is that these exogenous etiological elements produce an eruption in one individual and not in others, and why the same individual may at one time escape and at another time suffer from their baneful influence. Modern science has demonstrated the almost omnipresence of the micro-organisms which are blamed for the various eruptions, and yet very few are injuriously affected by them!

Intelligent reasoning would surely answer that it is because the system or the tissues were at one time susceptible to their harmful influence, while at another time they were capable of resisting the attack. We all know the powerful influence of the liver in arresting deleterious elements from entering the blood current, and the efficient work of the phagocytes in rendering them harmless when they have gained access to the vital fluid or tissues. We all know that, although pus cocci are almost omnipresent, they relatively seldom give rise to boils and carbuncles, even though they are often found within the follicles of the skin; nor can these be produced by their artificial inoculation in healthy skin.

True science should look deeper than local causes in a large share of cases of many kinds of disease, and the study of metabolism is throwing great light on the true pathogeny of many affections, including some of those of the skin. As the study of metabolic disturbances progresses, illumined by careful volumetric analyses of the urine—that true indicator of the state of the arterial blood—it will be more and more apparent and realized that successful practice will depend upon the careful recognition and treatment of disordered systemic conditions, with due regard to local causation.

But all recognize that metabolism is influenced, or determined for good or bad, to a great degree by the proper or improper action of the various organs and emunctories of the body, and universal experience shows that these are again influenced continually by the character of the food and drink taken.

The effect of diet in diseases of the skin has not yet been at all clearly worked out; indeed, there is relatively little definitely determined in this line. But no one who has carefully observed and studied patients in private practice for many years can fail to be struck with the ill results of indiscretion in eating and drinking in a number of affections of the skin, such as urticaria, acne, eczema, psoriasis, etc.; and if dietary effects can be observed in these diseases then the same must be of greater or less importance in connexion with very many others, for metabolic errors certainly influence nutrition and repair. The harmful influence of alcohol in many diseases of the skin is most marked,[1] and the injurious effects of excessive meat eating in psoriasis has been mentioned by many observers; while the beneficial influence of an absolutely vegetarian diet in the latter disease is most marked and interesting,[2] as I have witnessed in dozens of cases.

In certain more acute and inflammatory conditions of the skin the effects of erroneous diet are often very striking, while, conversely, the results obtained from a proper and often very restricted diet are sometimes very remarkable. All are familiar with the various forms of urticaria and erythema from quite a variety of articles of diet, of acne after particular and great indulgence in sweets, chocolate, milk, etc., fresh attacks of acute eczema after over-indulgence at the table, outbursts of erythema multiforme following great indiscretions in eating and drinking, etc.

For many years I have used a rather peculiar and unusual form of diet in many of these very acute attacks, which has been of such inestimable service that I think it worth while to call especial attention to the matter.

The first occasion when I employed it was on January 2nd, 1906, in an excessively severe outburst of bullous erythema multiforme in a man aged 43, who had had two similar attacks within the previous three years.

This patient had been eating heavily and drinking champagne, and the attack had begun only at 4 o'clock on the preceding afternoon, with a few small papules and much itching. Within the twenty-four hours it had developed in a most violent form, and both hands and wrists were the seat of intense inflammation, with great swelling and small and large tense bullae, more or less haemorrhagic, the intensity of the process seeming to increase even while the case was being studied; he was in real agony from the burning and itching, and intense erythrism of the whole system; the pulse 88, hard and throbbing, and the tongue coated. He was given a laxative and an alkaline diuretic, with a lotion, and was told to confine his diet for a few days to boiled rice, bread, butter, and water, and absolutely nothing else.

He was seen five days later, and the change was remarkable, the eruption had cooled down at once, and the hands and wrists were then almost normal, except the desquamation from the bullae, and they gave him no discomfort. He remarked on the great difference in the course of the eruption under this treatment from what he had experienced in the two former attacks.

Since that time I have employed this method of dietary treatment, with other proper measures, in a very considerable number of cases of acute inflammatory dermatoses, mainly in private practice, and with the most gratifying results, so that now I can almost promise that in a very short time there shall be the greatest relief to the suffering accompanying them, and am confident that the results far exceed any that I had ever had before without it. In several cases of very acute general lichen planus and dermatitis herpetiformis the results have been very striking, as also in acute urticaria. Some cases of rapidly developing psoriasis, with much congestion, have also been most favourably affected by this plan of diet, in all instances, of course, with other measures suitable to the condition present.

Some of the most satisfactory experiences have been in patients with very acute generalized eczema, which sometimes prove so exceedingly difficult to control.

A remarkable instance occurred recently in the person of a physician, aged 38, who for ten years or more had had eczema of the toes with occasional eruption on the hands, in the groin, about the navel, etc.

Seven weeks before he was first seen, April 21st, 1910, he suffered from a burn of the left hand, which was followed very shortly by an eruption, which spread quickly to the arms and body, so that when first seen the eruption was wellnigh universal. The hands and arms were swollen to double their size, and covered with fine vesicles; the feet and limbs were also greatly affected, tense, and in some places exuding, as were also the body and face; the burning and itching had caused intense suffering for some weeks, and sleep could not be obtained even with the strongest measures. In addition to proper remedies, he was placed on a diet of absolutely nothing but rice, bread, butter, and water. The next day the eruption had cooled down considerably, and five days from the first the change in his condition was remarkable. All tenseness had gone, and the hands and feet were about normal in size and the skin peeling freely. He had always been a great meat eater, and had taken whisky freely and much beer in summer.

A very similar case was seen on January 26th, 1910, in a lady aged 48, whose agony was excessive from acute eczema, which had been increasing for two months. In three days all had cooled down, and she was relatively comfortable, though, of course, requiring further treatment.

It is not necessary to multiply cases, many of which could be given which have been seen during the past four years; the result has been uniformly satisfactory, the patients recognizing at once the relief to the system given by the greatly restricted diet. When first proposed or ordered there is always some remonstrance, and many questions are asked as to other articles of diet, but experience has taught me that the best results are obtained by adhering strictly and absolutely to the articles mentioned, certainly for a few days.

A few words may be said in regard to the *rationale* of the plan. We know less about the metabolism of the carbohydrates and fats than we do of that of the proteids, the waste products of the former being largely carried off by the lungs, whose excretion we have not yet learnt to analyse easily, while the nitrogenous elements are readily analysed in the urine. But in a large share of certain diseases of the skin the urinary secretion is found to be imperfect or deficient, and proteid metabolism seems to be at fault in many of them.[3] The idea occurred, therefore, of relieving the liver and kidneys, as far as possible, from nitrogenous elimination by the withholding of exogenous proteids, and rice and white bread were selected as being foods most free from nitrogen. Water alone was freely supplied for the necessities of the system, milk being avoided, having a large proteid element, and also coffee, tea, and chocolate, as having considerable xanthin products. By the free use of rice and bread-and-butter an abundance of calories can be introduced, and in no instance has the patient seemed to suffer from the absence of the ordinary ingredients of mixed diet.

It is not a little interesting to note that careful volumetric analysis of the urine during a strict vegetarian diet shows that the excretion is by no means devoid of nitrogenous elements, and this very simple rice diet allows the organs to remove much effete endogenous nitrogenous material from the system; the acidity of the urine keeps up fairly and the urea will often be maintained at somewhere near the normal amount.

It is not to be supposed that this greatly restricted diet is maintained for any great length of time; my first directions are that the patient shall observe this régime for three or five days. By the second or third day there is the greatest change in the feelings, and much of the intensity of the inflammatory process has subsided, and, with other proper treatment, there is a most marked improvement and relief; by the fifth day this is much more evident, as in the cases mentioned, where all tension had ceased and desquamation was well in progress.

After the fifth day I commonly allow a moderate mixed meal to be taken at noon, continuing the rice, bread, butter, and water alone for the morning and evening meals. In a few days more I give also a moderate breakfast, but with very little meat at either time, and maintain the evening meal still as at first; some days later other food may be allowed. I may remark, however, that I find it very advantageous to make the evening meal very light in many inflammatory diseases of the skin, and often insist upon it for long periods; the sleep is much better and is less likely to be disturbed by itching.

The preparation of the rice is a matter which should receive some attention, as it has much to do with its acceptability and digestibility. It should be thoroughly cooked, but not with too much water, never with milk, and should then be left uncovered on the fire until it has more or less dried out and is flaky. I direct that it shall be eaten slowly, with a fork, with butter and salt, and well masticated, as also the bread-and-butter; it is not to be washed down with water, but the latter is to be drank separately, as freely as desired, hot if preferred, but not iced. When milk is given later to these patients I find that is best borne when taken warm, pure, and alone, one hour before eating, especially before the evening meal, on the plan which I have repeatedly advocated for many years past.[4]

It may seem unnecessary to enter into these commonplace details before a scientific body, but I can assure you that experience has long taught me that careful attention to small details is of vital importance in connexion with dermatology; and one sees them so often neglected, and with such bad results, that they cannot be too often urged. If I shall have succeeded in aiding anyone as I have been aided, in the management of these often trying cases, by my simple presentation of this, to me, very valuable treatment, I shall feel amply repaid.

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[1] Bulklev, The Influence of Alcohol in Certain Diseases of the Skin. *Medical Record*, February 19th, 1910. [2] Bulkley, The Value of an Absolutely Vegetarian Diet in Psoriasis, *Journ. Amer. Med. Assoc.*, February 22nd, 1908. [3] Bulkley, Imperfect or Deficient Urinary Excretion as Observed in Connexion with Certain Diseases of the Skin, *Journ. Cutan. and Genito-Ur. Dis.*, March 1900, p. 99. [4] Bulkley, On the Proper Employment of Milk, especially in Certain Diseases of the Skin, *Dietetic and Hygienic Gazette*, May, 1908.

DISCUSSION.

Professor P. G. Unna (Hamburg) remarked that treatment of skin diseases by special diet was doubtless very useful in certain cases, and he would certainly endeavour to watch in some of his own patients the results of such a restricted diet as had been just recommended.

Dr. M. B. Hartzell (Philadelphia) said he had no confidence in the influence of a vegetable diet in psoriasis. Doubtless in the future, when knowledge was greatly increased, it might be possible to lay down definite rules for diet, but at present it was impossible to do so in the great majority of diseases.

Dr. Alfred Eddowes (London) thought every one who had heard the excellent and suggestive paper just read would entirely agree with the remarks on the effect which diet produces on dermatoses. A few chocolates or rancid toffee were often enough to bring on an attack of urticaria papulosa. Rich, fatty food could quickly excite an attack of giant urticaria. He had known one kipper do so in the case of a patient who had previously been free for a month. The quantity of food taken was, as Dr. Bulkley had said,

important. Some cases of eczema in subjects of Bright's disease did very well with carefully limited diet, but at once relapsed if too much food or alcohol were indulged in. He strongly advocated giving plenty of water as a diuretic. A glass of water at bedtime often lessened irritation of the skin and any tendency to distressing dreams. Alcohol helped those who had small appetites, feeble digestion, and tendency to pain and flatus, but it was an unmixed evil and a superfluity for those who ate enough, or too much, with a good digestion. Here was the medical attendant's chance to help the patient to help himself. Certain articles of diet always upset certain people—onions and turbot, mackerel, mint, rhubarb, gooseberries, grapes, and eggs. An excess of alcohol and rich fats were probably only partially oxidized in the blood and lungs, and then acted as irritants to the skin and other organs. This recalled what went on in a cigar or candle which was allowed to smoulder. In the one case an ethereal oil and in the other fat became suboxidized (rancid). Possibly rancidity and disease were sometimes convertible terms. One ought to eat because one had an appetite, not simply because it was mealtime. In skin complaints, as in other diseases, there should, as far as possible, be included in the diet a food which was itself a remedy. In cases of lupus erythematosus he had succeeded in this direction with sour milk. In many cases of eczema whey had proved valuable.

Dr. R. B. WILD (Manchester) said that existing knowledge of the principles of dietetics was yet insufficient to enable definite rules to be laid down for patients in all cases of skin disease. There were three classes of dermatological cases in which dietetic treatment was of the greatest importance, though it was not possible at present to go beyond generalities. The first class consisted of persons in whom certain articles of food caused a dermatosis, usually of the vasomotor type. These substances were closely allied in their action to rash-producing drugs and the mechanism probably similar. As the patients affected had a delicately balanced vasomotor system, a slight disturbance of the balance of function known as "health" produced symptoms apparently out of all proportion to the cause. The next group, chiefly found in hospital practice, was made up of patients chronically underfed; their skin cells also suffered from under-nutrition and lacked resisting power. This condition was often the chief cause of the difficulty of curing cases of trade dermatitis. Under-nutrition also explained the cases of eczema in children, which merely required to be taken into hospital and properly fed to be cured by even the simplest local treatment. The third class of cases, chiefly seen in private practice, depended on the deficient elimination of waste products in those persons who fed too highly and took too little exercise. With regard to single articles of diet, apart from idiosyncrasy, excess of sugar was one potent factor in certain forms of eczema, and the products of overheated fat were very injurious to many people. With respect to the vegetarian treatment of ordinary psoriasis, the speaker had not been able to convince himself that it had any advantages over a mixed diet, though he was quite willing to admit that an excess of proteid was often injurious.

Dr. DAVID WALSH (London) said that in 1890 he had read a paper advancing the general conclusion that a large number of skin eruptions were explicable on the ground of excretory irritation, and later on embodied the same views in a small monograph under that title. His proposition depended on the fact that the skin was one of various excretory channels that might be irritated by the elimination of certain internal irritants from the body. That "internal irritant" might be a drug, such as iodine or copaiba, or a poison elaborated within the body, such as that of gout, or of bacterial origin, as in enteric fever. In many of those cases the internal irritant might be found in the skin irritation in such circumstances as to suggest cause and effect. Dr. Bulkley had laid special stress upon the excretion of iodides, alcohol, and bromides through the skin. Those drugs were discussed in the speaker's original paper, and if there were any truth in the generalization based on the phenomena occurring in connexion with their use, it certainly included the toxic irritant substances taken into the body in the form of food and drink. Illustrations might be found in meat ptomaine rashes and the intensification of acne papules by malt liquors.

Dr. W. KNOWSLEY SIBLEY (London) agreed that in the great majority of eruptive skin diseases the question of diet was of as much importance as external applications. Dermatologists in the past had seriously neglected the internal treatment, and had relied too much upon their ointments and lotions. To mention only one article of diet—alcohol, by its action as a dilator of the superficial blood vessels, caused an increased dermatitis in the majority of cutaneous eruptions. With regard to the question of vegetarian or meat diet, the whole subject resolved itself into that most complicated problem, namely, the treatment of gout and rheumatism and their infinite and indefinite symptoms.

Dr. GEORGE PERNET (London) said that with regard to diet in skin diseases generally, dermatologists were more or less in agreement. Like Professor Unna, he had been consulted by patients who had already tried a variety of diets, without result, and required something more than a new diet sheet. That a restricted diet like rice, as suggested by Dr. Bulkley, or a salt-free diet might be beneficial in some acute inflammatory diseases of the skin was undoubted, especially if the kidneys were inadequate and so forth. But in psoriasis he had not found strict diet—vegetarianism, for instance—of much service. Indeed, sometimes patients required a generous diet, more food than they had been accustomed to, especially hospital patients. In them bed and proper food made all the difference. He had often found that in the case of out-patients the wherewithal to get some food was an important element in the treatment of some cases suffering, in addition to psoriasis, from *la misère physiologique*. As to the suggestion that general (internal) treatment of skin patients had been neglected, he did not agree; for the late Dr. Radcliffe Crocker, with whom he had been associated for many years, was specially keen on taking cases as a whole and on their merits, and had emphasized that line of treatment in his admirable treatise on *Diseases of the Skin*. The speaker agreed in a general way as to the bad effects of alcohol in acutely inflammatory skin diseases.

The PRESIDENT (Dr. P. S. Abraham, London), in thanking Dr. Bulkley for his suggestive paper, said that he would invariably knock off all fresh fruit in acute inflammatory diseases of the skin. He did not think that the promiscuous use of soured milk was advisable, but when properly prepared this agent was of great value in certain cases. He agreed with one or two previous speakers that the circumstances and conditions of life in different patients, especially among the different races of mankind, altered cases greatly with regard to the sugar intake of which each was capable. With regard to the question of diet in psoriasis, he had come across some equally bad cases of the disease in teetotalers and vegetarians.

Dr. DUNCAN BULKLEY (New York), in reply, said he wished to emphasize the fact that it was impossible to draw safe conclusions from cases observed in out-patient practice, as this class of persons would not or could not perfectly carry out directions correctly for a sufficient length of time. Nor was it very feasible to judge from those who were in-patients in hospitals, as they were generally there for too short a time to determine the effect of diet in chronic ailments. But well-observed patients in private practice, in the better walks of life, when careful notes were taken at each visit, over some length of time, certainly showed the effect of diet, often in a remarkable manner. One speaker had mentioned that psoriasis had been reported to be benefited by an exclusive meat diet. The erroneous view in question arose something over forty years ago, when an unknown physician named Passavant, in a German journal, wrote an open letter to Professor Hebra, stating that he himself had had psoriasis, and was cured of it by what he called a meat diet and by avoiding tea, coffee, alcohol, etc. On studying this article the speaker (Dr. Bulkley) found that the diet was largely composed of fats, and that Dr. Passavant did not state if he

had used other treatment also, or if he had had any return of the eruption; he mentioned that one patient with eczema seemed to be benefited by the same treatment. In the next edition of his book Hebra took pains to allude to the article by Passavant, and scouted the idea and the value of such an imperfect observation. A search of literature now revealed the fact that during the forty years which had elapsed there had not been a single corroborative report, although the textbooks continually referred to Dr. Passavant's original communication and to no other report. Surely in all these years there would be some confirmative evidence, if the statement made was true regarding this common, rebellious, and easily recognized disease. On the other hand, literature was full of more or less definite statements regarding the injurious effects of a nitrogenous diet in psoriasis and of the value of one restricted to the carbohydrates and fats. For about a year past the speaker had kept a special list of the cases of psoriasis seen in private practice under vegetarian diet; they numbered over 100. Many of the cases were recent, but many of the patients had pursued the dietary treatment for months or years—in some instances over ten years—with more or less faithfulness. From a careful observation and study of these cases he was thoroughly convinced of the inestimable value of his mode of procedure. In some instances, where the patients had long had the eruption, he had placed them solely on a strictly vegetarian diet, with no local or internal measures whatever, and had seen the eruption steadily vanish. In many instances he had seen a relapse when the absolute diet was not followed, the eruption yielding again to a rigid course. He did not, of course, claim that psoriasis could be always cured by a vegetarian diet alone, although he was positive that it was a great element in treatment; when relapses did occur, they were mild and yielded much more readily. He wished it also to be recognized that to be effective the vegetarian diet must be absolute, butter being the only article allowed which did not come from the ground. Alcohol in every form must be excluded, and often it was necessary to avoid tea and coffee as being xanthin-bearing substances.

RECENT EXPERIENCES IN THE TREATMENT OF FAVUS.

By J. F. HALLS DALLY, M.A., M.D.Cantab, M.R.C.P.Lond.,
Assistant Physician, National Hospital for Diseases of the Heart; Physician to the St. Marylebone General Dispensary.

I HAVE been asked to give an account of my personal experiences in the treatment of favus at the London County Council Special School in the East End of London, and I trust that the few brief remarks which I have to make on a disease now very rare in London may not be without interest to the present Section.

In June, 1906, this school was opened at Finch Street, Osborne Place, in the vicinity of Aldgate, for the purpose of treating a large number of existing cases known to the Council. Since its opening 152 children have been admitted for treatment, which in all the early cases consisted in the application of lotions and ointments, *x*-ray treatment being instituted for the first time in May, 1908. Of the 152 cases, 82 have had *x*-ray applications; 132 children were discharged from the school with the disease cured, 1 was discharged for observation, no note was made as to the condition on discharge in 7 cases, 11 left for various reasons, some of these having reached the age-limit, and 1 died of pulmonary tuberculosis. No case was entered as cured without careful microscopical examination of several hairs taken from various portions of the scalp, and the majority of these cases since their discharge have been kept under observation. In one case only has the fungus been found again present one and a half years later. Very rarely has it been necessary to apply *x*-ray treatment for the second time owing to failure in securing successful epilation at the first attempt.

During six months ending June 30th, 1909, 50 children were discharged as cured, 24 being admitted; during six months ending December 31st, 1909, 20 children were discharged as cured, 7 cases being admitted, and 3 being still under treatment. By March of the present year it was found that the stock of available cases was becoming exhausted; in other words, that, failing the introduction of fresh cases through alien immigration, the disease is practically stamped out for London. Is it too much to hope that in the future we may be adequately protected against fresh sources of infection by the rigid enforcement of the Aliens Act?

No monopoly of favus cases is, of course, claimed for this school, for sporadic cases crop up at most of the large hospitals; but whereas cases in the East End of London were formerly much more numerous, they are now comparatively non-existent. Hence in this large area the complete extirpation of the disease as regards children of school age has been attained, and the school was consequently closed, by order of the London County Council, on May 9th, 1910.

Of the first 23 cases admitted, 21 had already been under hospital or other treatment, but only one child had materially benefited. The majority of admissions within a short time of closure was composed of younger brothers and sisters of children previously treated in the school, and, apart from these, few fresh cases have been discovered. In one of the latter the child (a Russian Pole) was said to have had the disease for at least six months prior to admission to this country, whilst another (a German Pole) is said to have had the disease for five years before coming over, and to have been in England three years.

Five families closely related have had various members treated in the Finch Street School, the children treated, seven in number, being in each case first cousins. With one exception (Irish) all our cases were aliens.

I do not propose to weary you with an elaborate description of the condition. This can be found in the textbooks. It may suffice if I briefly sketch the outlines of the disease as it appears clinically. By no means does every child present the sulphur-yellow scutula and mouse-like odour described as characteristic of the disease. In some cases the cups are yellowish-white in colour and irregularly distributed over the scalp. In other cases, again, no cups are present. The majority of cases show a considerable amount of inflammatory hyperaemia, best marked in those localities where the disease is most active. In these situations there is frequently falling of the hair, and numerous yellowish crusts and scabs composed of epithelial débris and serous exudation, varying from the size of a threepenny piece to that of half a crown, are seen all over the hairy scalp. In a well-marked case which has existed for some months or years, smooth, paper-like scars, often depressed, and patches of cicatricial atrophy are seen in the sites of the old disease. In some instances, owing to the presence of small, closely-aggregated areas of cicatricial atrophy, each of which is covered with dry epidermic scales, the hair, when cut short, presents a moth-eaten appearance. The mousy odour, when present, appears to be associated with the sulphur-yellow cups; if suppuration has occurred, sometimes a faint odour which differs from the above may be noted. In most recent mild cases the mousy smell is absent. In addition to suppuration another complication of the disease which most frequently occurs is impetigo contagiosa. This latter at times may be so extensive as to mask almost entirely the original condition. Tinea favosa capitis is usually most apparent on the vertex, and the affected hairs are lustreless, in black-haired subjects, in whom the disease is usually seen, appearing greyish-brown and dead. The loss of hair is patchy and the alopecia resulting can almost invariably be distinguished from that which follows the application of *x* rays of too great intensity or too prolonged duration.

The method of treatment which I have found to give the best results is as follows: On the day previous to the application of *x* rays the hair is cut quite short with clippers, which are then carefully sterilized, and the child's head is washed with soft soap. If many crusts or much suppuration is present, the head may be further cleansed by the application of cyllin poultices. *X* rays are applied after the manner advocated by Kienbock, which was first shown to me by Dr. Adamson, who published a description of the method last year in the *Lancet*.[1] The hairy scalp is mapped out by taking five centres, each of which is not less than 5 in. from the ones adjacent, and by this means the whole scalp is epilated by five exposures, each case taking on the average about one hour. Protection for operator and nurse can be attained by the use of any

suitable form of shield, the one passed round being a simple form which I devised for use with our own form of apparatus. By far the most satisfactory tubes in my experience are the Chabaud and the Drisler, the latter having the advantage of cheapness and of standing the passage of a greater amount of current. Eighteen days afterwards the head is washed, by which time the hair has begun to fall out. A cyllin poultice is applied daily for the next three days, the head being washed daily after this for seven to ten days. By this time the scalp should present a billiard ball appearance, and if there should be a few stumps still remaining, these are picked out individually with epilation forceps. Unless contraindicated, pure izal or cyllin is painted on once weekly. Should this prove too strong, solutions of greater dilution are employed, or ung. hyd. amm. dil. is rubbed in daily. A new growth of curly hair appears in about nine weeks' time, and by the end of three months is frequently half an inch in length.

If for any reason *x*-ray treatment cannot be immediately applied, the disease may be held in check by the application of strong solutions of oxidized hydrocarbons, of which cyllin and izal are the best, since, although antiseptic and disinfectant, they are neither caustic nor toxic. The most useful ointment is one which is frequently used by Dr. Abraham in the treatment of ringworm cases at the West London Hospital and elsewhere, which consists of 50 per cent. oleate of copper ointment, together with a like quantity of an ointment of carbolic and salicylic acids (āā ʒj ad ʒj).

Although, as regards ringworm, I am in complete accord with our President in the opinion that the use of *x* rays is unnecessary for every case, since it is a frequent observation that many early and limited cases can be more speedily cured by effective ointment treatment, yet I think it will not be gainsaid that for favus *x* rays should be advocated as the best possible treatment.

REFERENCE.

[1] *Lancet*, May 15th, 1909, p. 1378.

NOTE ON SOME VARIETIES OF "MOLLUSCUM CONTAGIOSUM."

By P. S. ABRAHAM, M.A., M.D., B Sc.,
President of the Section.

WHEN "molluscum contagiosum" occurs as small, pearly-looking, sessile excrescences, the diagnosis of the affection is easy, even without microscopical examination; but when the little tumours are embedded within the skin, and not raised above the surface, the true nature of the lesions may be excusably overlooked by any but the experienced dermatologist. This is also the case when the growths are developed very closely together, or "agminated," forming a flattened area slightly raised above the surrounding integument. Both conditions are rare, and perhaps this is why so few dermatological textbooks and writers make any allusion to them.

Of the former variety a good example came under my notice on the hands of a woman, both on the palmar and dorsal aspects. Under a lens translucent foci were to be seen embedded in the skin, with no protrusion, but with a slight tendency to umbilication in the larger ones. A scraping exhibited the typical "molluscum bodies," and soon confirmed the diagnosis.

An interesting instance of the "agminate" variety has recently been under my care. A young lady had upon her neck, just below the larynx, a brownish, rough, and scaly oval patch, with an irregular outline, measuring about 3 by 2 cm., and but slightly raised above the surface. This had existed for many months, was slowly increasing in size, was itchy, and had been treated for "eczema." It certainly at first bore strong resemblance to a patch of chronic indurated eczema. Not very far off, however, a few undoubted "mullusca contagiosa" were to be seen elsewhere on the neck, and their presence led me to look more closely into the larger lesion. I found that the patch really consisted of numerous small "molluscum contagiosum" growths, closely massed together. The cure was effected by scraping out and by the application of carbolic and salicylic ointment. I subsequently saw the lady's sister, with whom she slept, and she had two or three small but typical growths, also on the neck. Her lesions had existed for a much longer period than her sister's, but had not extended or become massed together.

We may presume contagion in this case, probably from the use of the same towels or pillow cases; but I must confess I have come across little traceable evidence of contagion in cases of this disease. I can confirm, however, Sir Jonathan Hutchinson's original observation of the occurrence of "molluscum contagiosum" among the frequenters of Turkish baths. Three very extensive generalized cases which I have lately seen in private practice were accustomed to go to Turkish baths, and two of them to the same establishment.

I may add that these generalized cases, even where the individual lesions are quite typical, I have known mistaken for, and treated as, very different diseases—for example, acne, syphilis, and chicken-pox!

SOME CASES OF ACTINOMYCOSIS, WITH ESPECIAL REFERENCE TO TREATMENT BY POTASSIUM IODIDE.

By R. B. WILD, M.D., M.R.C.P., M.Sc.,
Professor of Materia Medica and Therapeutics in the University of Manchester; Honorary Physician to the Christie Hospital, and the Manchester and Salford Hospital for Skin Diseases.

FOR over ten years previous to 1907 we had no cases of actinomycosis at the Manchester and Salford Hospital for Skin Diseases, and I am not aware of any cases occurring in the district.

Apparently some source or sources of infection must have been imported in the spring or early summer of 1907, and caused a group of four cases, which came under my own observation in the autumn of 1907 and the first part of 1908. Possibly other cases occurred, but I have not hitherto heard of any, nor have we seen any fresh cases at the hospital since April, 1908.

The appearances presented by cases of actinomycotic infection are so well known and so much alike that a minute description is unnecessary at the present time. I purpose, therefore, briefly to describe the salient features of each case, and to draw attention to certain points, more especially with regard to treatment, which appear worthy of note. The cases are as follow:

CASE I.

J. H. A., youth, aged 19, an iron-driller by trade, but out of work for some time and "doing odd jobs," which had included the care and feeding of pigs. He had been ill with swelling of the left cheek and abscesses for about fourteen weeks, and had been a patient at the Salford Royal Hospital, where a diagnosis of actinomycosis was made, abscesses opened, and iodipin administered.

First seen at the Skin Hospital on September 18th, 1907. He was a pale, well-nourished youth of fair complexion. All the internal organs were healthy.

The left side of the face and neck was much swollen and presented cicatrices where abscesses had been opened. The swollen surface was irregular and studded with nodular inflammatory swellings and papules, many of which were broken down into abscesses and sinuses discharging purulent and sero-purulent matter. Several subcutaneous swellings of a larger size were present in the neck; the lowest reached the left clavicle near the sternum, and the most posterior, about the size of a pigeon's egg, was behind the left ear.

The eyelids were much swollen, the left eye closed, and could not be opened to inspect the conjunctiva. Inside the mouth the gum of the lower jaw on the left side was swollen, and there was some discharge from the alveoli of the molar teeth, which were absent on that side. The left cheek was hard and projected into the cavity of the mouth, which could only be slightly opened.

The purulent discharge contained some granules and the actinomyces was found in it.

The patient was taken into the hospital and treated by boric acid fomentations for a few days, afterwards by a dressing of 1 in 80 carbolic acid, which was also used to syringe the sinuses and abscesses. An antiseptic collutorium was used frequently. Sittings were given twice a week for a month with *x* rays, ten minutes each time, with an open tube, moderately hard. As no benefit appeared to be derived from the *x* rays, they were then stopped.

He was placed on a full milk diet, with broths and eggs, but salt, potatoes, and vegetables forbidden. Internally potassium iodide was given in 40 and then 60 grain doses, three times a day at first, then four times a day, and later a smaller dose six times and then eight times a day, the total daily dose remaining at a maximum of 240 grains. On account of the rapid elimination of potassium iodide I believe a more marked effect is obtained by giving the drug at short intervals, and I have found no difficulty in doing so if a solution is made of ʒj of potassium iodide in ʒviii of plain water, and ʒss or ʒj (representing gr. xxx or gr. lx respectively) given in a cup of milk every two or three hours.

There were no symptoms of iodism, and this treatment was continued for ninety-four days, when he had taken 10,380 grains of the drug.

In December he acquired a severe cold, and had a few spots of iodide acne. The drug was stopped for a week and a diaphoretic mixture given. Then the potassium iodide was resumed, at first 60 grains daily and increased to 120, and continued for a hundred days, during which he took 7,755 grains. He was then discharged from the hospital and made an out-patient, April 11th, 1908. All the sinuses were healed; there were no abscesses, but the tissues were considerably swollen; the left eye was slightly open and was quite healthy.

He attended regularly as an out-patient for six months longer, taking 60 grains of potassium iodide daily, a total of 9,120 grains in one hundred and eighty-eight days; he was then well and able to resume his work. I have seen him at intervals since then, the last time in May, 1910. He remains well, but is still unable to open the left eye as fully as the right, and there is slight swelling round the operation scars. In all, he took 27,255 grains (nearly 4 lb.) of potassium iodide in thirteen months.

CASE II.

S. M., a butcher, aged 56, seen in consultation. A somewhat stout man, but had lost flesh and strength during his illness. No history of infection could be obtained nor any remembrance of any affection, which might have been actinomycosis, in cattle with which he had been in contact.

He was seen on October 11th, 1907, and stated that about five months previously he first noticed a swelling near the angle of the jaw on the right side, this increased in size, and four months ago his doctor saw it and opened an abscess which discharged pus. The abscess never healed, infiltration spread round it, other abscesses formed, the general health broke down, and two nights previously a large haemorrhage occurred from a sinus just below the right ear. When seen he was pale and tremulous, pulse 130 and weak. The whole of the right side of the neck and the posterior part of the right cheek below the ear were much swollen, dark brownish-red in colour, and studded with openings from which purulent discharge exuded. Some of this was collected for examination and actinomyces found. There were no visible lesions inside the mouth, but the mucous membrane of the cheek was sore. Potassium iodide in gr. x doses had been prescribed, but he had only taken it very irregularly.

The haemorrhage recurred and he died from exhaustion a few days later.

CASE III.

E. C., a married woman aged 43, a foreign Jewess occupied in housework, a dark-complexioned, rather thin, small woman. She did not speak English well, and the history was difficult to obtain; no probable source of infection could be ascertained; she stated that the affection of the face began nine months previously, and she had been a patient at the Ancoats Hospital, where a diagnosis of actinomycosis was made. First seen at the Skin Hospital, February 19th, 1908. In appearance she had a marked resemblance to Case I, but was much less severe. The left side of the face and upper part of the neck was swollen and studded with nodular inflammatory swellings; some of these were broken down, and discharging pus and sero-pus which contained actinomyces. The left eye was completely closed from swelling of the lids.

She refused to come into the hospital, and was treated as an out-patient by applications locally of lead and carbolic lotion, and internally potassium iodide, 120 grains daily, given in milk in divided doses. In three months she had taken 10,080 grains, and was greatly improved, and the drug was stopped for three weeks and then continued in doses of 45 grains, and afterwards 30 grains, daily, for five months longer, when she considered herself well and ceased attendance, having taken 13,280 grains of potassium iodide (nearly 2 lb.) in eight months. I saw nothing of her again until January, 1910, when she came to the hospital suffering from eczema of the perineal region. She had some scars from the former abscesses, but no signs of actinomycosis. I saw her last in May, 1910, and she remains well.

CASE IV.

M. T., married woman, aged 40, engaged in housework. Admitted to the Christie Hospital, April 23rd, 1908, under the care of my surgical colleague, Mr. A. H. Burgess, F.R.C.S.

The patient had not been well for some months; she had suffered from obscure abdominal pains and had lost flesh. Five weeks before admission the pains became more severe, especially after exertion, and were localized in the right iliac region and groin. On deep palpation a hard mass was found in the right iliac fossa. The mass was fixed, well defined, and nodular, the most superficial part about the size of a walnut; no fluctuation was perceptible, and the upper part of the mass was the only place where pressure caused pain. The temperature was of hectic type, reaching 102° in the evening.

A laparotomy was performed, and the mass found to be behind the bowel and irremovable. A portion was removed for microscopical examination, and proved to be inflammatory tissue; no tubercle bacilli or histological tubercles were found.

The abdominal wound healed, and she went home, but was readmitted July 9th, 1908, with a red, brawny swelling on the right hip. This burst the following evening, and discharged freely; the pus contained opaque bodies, which proved to be actinomyces. A small discharging sinus was also present in the scar of the first operation.

On August 26th the sinuses were thoroughly scraped out under anaesthesia by Mr. C. Roberts, F.R.C.S. As soon as the actinomyces was found she was placed under potassium iodide, at first a small dose as she was anaemic and very weak. This was gradually increased to 180 grains daily, and for a time she improved considerably, and we had hopes of her recovery.

Towards the end of October, however, fresh abscesses formed in the groin and round the hip. The operation was repeated, and five sinuses opened up and drained. A faecal fistula developed with new abscesses; she became very weak, and in the middle of November the potassium iodide was stopped. She had taken over 9,000 grains in three and a half months. She lived six weeks after the iodide was stopped, and died from exhaustion at the beginning of January, 1909.

The autopsy showed extensive infiltration of all the muscles round the hip, the bodies of the lower three lumbar vertebrae were almost destroyed, and the pelvic bones affected. There was a perforation of the ascending colon, the wall of which was extensively involved. It was impossible to say where the disease originated, but the appendix vermiformis was healthy.

REMARKS.

There are several points in the above cases which seem worthy of mention. In all the cases the diagnosis was verified by the discovery of the fungus, and this was confirmed by further examination in the pathological department of the university under the supervision of Professor Lorrain Smith.

The striking similarity in the appearances presented by the three cases where the face and neck were affected. This was very marked in Cases I and III, which differed only in the degree of severity and extent to which the neck was involved.

The time at which the infection occurred. The case first seen in September, 1907, had a history which pointed to infection some time before June, 1907. The history in the second and third cases also brought the probable date of infection to the same time.

The fourth case, seen in April, 1908, had only a history of several months' illness, but the extent of the disease discovered at the first operation showed that—judging at the rate of progress in the other cases—infection must have occurred some considerable time before the symptoms became sufficiently severe to lead the patient to seek relief, and it does not seem unreasonable to assume that at least nine months had elapsed between infection and the first operation. Thus in three of the four cases, and probably in the fourth also, infection occurred in the spring or early summer of 1907.

Etiology.—**No obvious source of infection could be traced in any of the cases. The difficulty was largely increased by the fact that no case came under observation within three months of its origin. The only significant facts are that the first case had been engaged in feeding pigs; none of these pigs were diseased, so far as could be ascertained by inquiry. The second case was a butcher, and possibly exposed to infection in several ways. The third and fourth cases, in married women engaged wholly in housework and living on ordinary diet common to the rest of their household, are quite inexplicable, and only show how infection may occur in the most unexpected places. No connexion of any kind could be traced between the cases. No one of the patients knew any of the others. All the patients, however, lived in the north and west quadrant of the district, and the most remote case came from Eccles, four miles west of the city.**

Treatment.—**The value of large doses of potassium iodide is well shown in these cases, especially Cases I and III. I have never seen so severe a case as Case I recover. He had been well treated with smaller doses of potassium iodide and also by other iodine preparations, but the disease extended, and it was only when the dose of potassium iodide reached 240 grains daily that improvement began. When fully under the influence of the iodide the simplest local treatment—namely, carbolic acid lotion 1 in**

80—was quite sufficient, and no further operative measures —not even the opening of an abscess—were required. Case III was much less severe and recovered under doses which never exceeded 120 grains a day. Case II was never really under the influence of the iodide prescribed for him; he was difficult to control and only took a few doses intermittently. Case IV responded for a time to the potassium iodide; she was very weak; the dose could not be pushed beyond 180 grains a day, and the autopsy showed considerable bone affection. It is possible that the great vascularity of the head and neck is an important factor in bringing the potassium iodide into contact with the diseased tissues, and that the results when less highly vascular tissues are attacked may be less satisfactory. The very large amounts of potassium iodide which were taken in these cases for many months without harm, and with only very trifling and temporary symptoms of iodism, are worth noting at a time when we are pressed to discard this most efficacious drug in favour of less active substitutes, on the ground that the alkaline iodides cannot be continued in large doses without injurious symptoms. I consider that the diuretic effects of large doses of potassium salts is an important factor in preventing iodism; most of the severe cases of iodism met with are produced by doses too small to act as diuretics, and on this account the iodide of potassium is preferable to the sodium salt where large doses are required. It is important also to reduce the consumption of other salts and foods containing much saline constituent when the dose exceeds about 120 grains daily. In giving large doses, the method of making a strong solution in plain water and giving each dose in 4 to 6 ounces of milk is very useful; there is no difficulty in administering eight doses in the sixteen hours of wakefulness which comprise an ordinary day, and the body is kept more fully under the influence of a rapidly eliminated drug like potassium iodide when the doses are given at short intervals than by much larger doses given three times a day, as is the more usual custom.

SOME POINTS IN CONNEXION WITH ELECTROLYSIS FOR HIRSUTIES.

By WILLMOTT EVANS, M.D., F.R.C.S.

IN the opinion of all who have had much experience of it, electrolysis is decidedly the best method of treatment of hirsuties, and this has been recognized ever since its introduction by Hardaway. It is worth bearing in mind that the method was suggested to Hardaway by Michel, who had employed it for ingrowing eyelashes, and ophthalmic surgeons recognize its value. There was for a time an attempt to advocate the use of *x* rays for the removal of excessive hairs, but in my opinion it is untrustworthy, and I do not think it should be employed, though it is, of course, of the greatest value in cases where it is wished merely to remove hairs temporarily.

In spite of the fact that most dermatologists value electrolysis highly in the treatment of hirsuties, from time to time objections are urged against the method, but this is largely due to the mode in which the method is applied and not to the method itself. The fact that electrolysis for hirsuties is largely employed by unqualified persons will also account for some of the unsatisfactory results.

The most common objection made to electrolysis is that there is a great tendency to recurrence. This is mainly due to inefficient application; the needle has probably not been introduced exactly along the hair follicle, or it has not been inserted sufficiently far, or the wrong pole of the battery has been used. It is essential that the needle should be attached to the negative pole, for at that pole only is the destruction of the hair papilla complete and rapid. A very small percentage of the hairs removed may reasonably return, but these should not exceed 10 per cent., and in skilled hands it may not exceed 2 per cent.

The pain of the operation is also sometimes advanced as an objection to the method, but it is really very slight if an excessive current be not employed.

Pustulation should hardly ever occur if antiseptic precautions be taken, though if these precautions be neglected troublesome sepsis may result, and this is especially likely to occur when electrolysis is employed by unqualified persons. A keloid formation in the scar is, in my opinion, also microbic in origin, and I could, if time would permit advance many reasons in support of this opinion, but here it will suffice to say that it does not occur if suitable antiseptic precautions be taken.

Deposits of iron from the needle, producing small black marks, can only occur if the positive pole has been employed instead of the negative. It cannot occur if an iridoplatinum needle be employed, but, as I mention later, I think steel needles are better. The points which I consider of importance in electrolysis for hirsuties are the following: Precautions should be taken to make the skin of the parts affected as free from germs as possible. This is best accomplished by wiping over the surface with a suitable antiseptic, such as a solution of phenol (1 in 60); it is, I think, better not to use perchloride of mercury. This application of an antiseptic may be repeated from time to time during the operation. Quite as important—or even more important—is it to be sure that the needle is aseptic. This is best assured by employing a steel needle, and by using a fresh needle for each patient, and by sterilizing it by heat, as in a spirit flame, or by soaking it in a suitable antiseptic. The irido-platinum needle has the advantage that it can be bent so as to make it easier to introduce in some positions, but this is only a small advantage. That the irido-platinum needle does not cause pigmentation when it is attached to the positive pole is, I think, no advantage, for the needle should never be attached to the positive pole, as that pole is much less efficient.

The current used is best furnished by Leclanché cells, and six are quite sufficient. The current should not be made until the needle is at rest in the follicle, and it is best to break it at the positive pole, which is held in the patient's hand. A milliammeter should always be employed, so that an excessive current is not used. A little under 1 milliampère is the best strength of current to employ, and a small resistance should be in the circuit so as to make it possible to control the strength of the current. From ten to twenty seconds are sufficient, and if the electrolysis proceeds for a longer time a small scar may result. The hair may not be quite loose immediately after the cessation of the electrolysis, but it becomes looser a short time after, as the alkali formed in the follicle has time to dissolve the keratin.

Lastly, it is of supreme importance that too many hairs should not be removed at one sitting, or, in other words, the sittings should not be too long; from three-quarters of an hour to one hour should be ample.

A CASE OF PEMPHIGUS VEGETANS:

WITH REMARKS ON TREATMENT.

By GEORGE PERNET, M.D.,

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THE following are the notes of a case which was originally in the West London Hospital, but which was transferred to another institution, as the former hospital had to be emptied for cleaning. The case in the first instance, as far as I am concerned, was under the care of Dr. Abraham, and in the last stages under mine. I am indebted to Dr. Abraham for his notes of the case, and I shall therefore begin at the beginning, and give them first for the sake of lucidity.

The patient was a male, aged 39, admitted February 15th, 1908. Until this illness his health had been fairly good. Scarlet fever ten years previously, and gonorrhœa twenty years ago. No syphilis. Has been a post-office attendant. The disease started with an eruption on the face, taken for "barber's rash," two years previously, commencing on the upper lip. Some months later a sore place appeared on the scrotum, discharging freely, and spreading to the pubes, the inner parts of the groins, and for some distance down the thighs. Meanwhile the cheeks, chin, and scalp had become infected. Six months later the axillæ were involved. The patient states that in most places the first appearance of the disease was in the form of soft warts, but his mother remembers seeing "blisters," especially about the thighs. The growths had spread up the thighs. He was treated in a provincial hospital with *x* rays, and some improvement followed at the time, but the patient ascribes much of the subsequent soreness of the trunk and increase of the disease to that treatment.

In June, 1907, he was admitted to one of the smaller London hospitals, and the condition was diagnosed as generalized condylomata. The patient was put on antisyphilitic treatment, *plus* perhydrol and dusting powder, with calomel locally. There was apparent improvement in some respects. He was then

sent to the Lock Hospital. There the case was not considered to be syphilitic, and the patient was put on arsenic.

He was then admitted to the West London Hospital, when his condition was as follows: The hairy areas of the face are covered with thick yellow crusts, beneath which are soft papillomatous, closely packed outgrowths, free discharging. The whole scalp is similarly affected, but in a less degree. The papillomatous lesions spread down the back of the neck, but there are also large raw areas discharging purulent fluid. Both axillae are filled up with similar but larger and closely packed growths of the consistence and appearance of condylomata, but giving a superficial appearance of epithelioma. The sides of the scrotum and the inner parts of the groins and thighs are occupied by similar growths. The base of the penis and the organ itself are oedematous.

There are several large erythematous areas on the sides and front of the trunk, whilst on the buttocks and back are open running sores. The discharging parts emit a most offensive sickly odour. Movement is very painful.

The patient's temperature on admission was 100.2° F.; pulse 104; urine 1006, no albumen, no sugar.

Treatment—The patient was treated externally with creolin baths and dressings and a soothing zinc and lead ointment for the inflamed parts. A mild compound mercurial ointment for face, head, axillae, and genitalia was ordered. Internally, quinine in large doses, iron, etc.

There was apparent improvement for a time, but on March 15th the temperature went up to 103°, and practically the whole of the trunk became covered with large erythematous blotches soon coalescing and becoming excoriated with raw exuding surfaces.

Previously to this a few purulent bullae had appeared on the toe of one foot—the first bulla that had been seen. The treatment was now changed, and protargol in 7 per cent. solution or in ointment was freely used and the quinine increased.

The temperature went down and the general condition improved, but other purulent bullae made their appearance. Polyvalent serum was injected, at the suggestion of Dr. Pernet, with marked benefit.

On March 21st this was repeated several times, and early in April the excoriations on the trunk had quite healed. In every way there was marked improvement. Recurrences, however, took place from time to time, in spite of repeated injections of the polyvalent serum and of atoxyl and various changes in the external applications. It was remarkable that the patient's appetite and spirits remained good the whole time, and he quite thought he would recover.

Staphylococci were found in the blood on March 15th, but none on June 6th. Dr. Tow, Pathologist to the West London Hospital, also made a blood count then as follows:

Polymorphonuclear cells	65 per cent.
Large mononuclear	2.5 ,,
Lymphocytes	18.5 ,,
Eosinophiles	13.5 ,,
Transitional	0.5 ,,

It was at this stage the patient had to leave the West London Hospital, and came under my care and observation. On admission the patient was in a very emaciated condition, and, I may add, in a hopeless one as to recovery. He presented large surfaces denuded of epidermis, with discharging lesions in the axillae and groins. Pus was discharging from raw surfaces round the eyes. About the mouth there were black crusts. There were pressure sores about the posterior superior iliac spines and the spines of the scapulae. The patient died ten days after admission. Everything was done to relieve him in his distressing condition. The following notes were made of the *post-mortem* appearances:

The body is that of a poorly-nourished man. No enlargement of any of the superficial glands. Mucous membrane of mouth and tongue normal. The pharynx, oesophagus, stomach, and intestines are normal; no ulceration, hyperaemia, or membranous deposit.

Mesenteric and retroperitoneal glands normal. No pus in any of the serous cavities.

Chest: Mucous membrane of air passages normal. Chest glands normal. Lungs large and emphysematous. Lower lobes of both lungs contain large areas of semi-solid tissue, which is red, oedematous, and friable, but is non-granular. There are no signs of tuberculous mischief in the lungs.

Heart: Right side of heart dilated and slightly hypertrophied. Muscle substance normal. At the free edge of pulmonary valve there are numerous small vegetations The other valves are normal. Right side of heart contains blood clot extending into pulmonary artery. Left side of heart is normal. Thyroid gland normal.

Abdomen: The liver is large, pale, and very fatty. No amyloid change, no suppuration, no cirrhosis. Gall bladder and passages are normal. Spleen large and soft. Kidneys large, capsules strip off easily; cortex is wide and shows cloudy swelling; pyramids normal. Ureters, bladder, and generative organs normal. Suprarenals normal. Mesenteric and retroperitoneal glands normal. Pancreas normal. Arteries healthy and show scarcely any alteration.

Brain normal.

Although quite a number of cases of pemphigus vegetans cases have been published since Neumann, of Vienna, first drew attention to this clinical condition, yet it is important to relate cases as they occur. In the first place for the very good reason that unless they come under the observation of a dermatologist familiar with pemphigus vegetans the disease is not only overlooked, but is apt to be taken for syphilis. This is a mistake frequently made, and before Neumann disentangled it the diagnosis of syphilis was the rule. In the present case this rule was verified, one observer having diagnosed it as syphilis and instituted anti-syphilitic treatment before the patient was admitted to the West London Hospital. Now, with the examination for the *Treponema pallidum* and the Wassermann reaction, such an error would be less likely to occur, although a positive Wassermann, if the patient happened to be a syphilitic as well, might make matters worse. This is a point worth remembering.

As to the *x* rays, they appear to have aggravated the condition in this instance. In any case, they would not be likely to cure any more than they do in mycosis fungoides, although the effect on the growths might be satisfactory at first.

When I saw the patient at the West London Hospital he was in a pretty bad way, and recollecting that my case of acute lupus erythematosus d'emblée,[1] though in a moribund condition, had rallied under injections of polyvalent serum, I suggested the empirical trial of that remedy to Dr. Abraham. The upshot, for the time at any rate, was satisfactory, and perhaps put off the evil day. When the patient came under my own care he was so obviously dying that it would have been useless to employ the serum again, a trial having been already made.

But a point I desire very specially to bring out is that an attempt should be made to get at the micro-organisms causing the mischief—for micro-organism it undoubtedly is, at any rate in the majority of cases—for we must confess that the main etiological factor at work has been elucidated in but few cases, and that only when too late. In a case of pemphigus vegetans which I published[2] I found the *Bacillus pyocyaneus* in pure culture in the fluid of a bulla. This was before vaccine days. But were such a thing to occur again, obviously the treatment would be to employ a *Bacillus pyocyaneus* vaccine, and with the hope of a successful issue. In any case the proper treatment for such a fatal condition as pemphigus vegetans would be a vaccine from the particular micro-organism found—that is, if it could be found. As we all know, the vegetating lesions in this and in many another condition are due to secondary infections, so that there we have an indication for another vaccine to be employed concurrently. Perhaps had a staphylococcic vaccine been employed quite early in the case detailed above some good might have been achieved. In such cases, too, opium, alone or in combination with arsenic, would perhaps prove useful.

A point to bear in mind with regard to pemphigus vegetans is that the disease is not an entity, but is, in my opinion, a clinical skin condition arising from various etiological factors, both essential and secondary.

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INVESTIGATION OF A DERMATITIS AMONGST FLOWER-PICKERS IN THE SCILLY ISLANDS, THE SO-CALLED "LILY RASH."

By DAVID WALSH, M.D.Edin.,

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THERE is reason to believe that rashes due to contact with plants and plant juices are more common than is ordinarily suspected by dermatologists. In the spring of the present year the author's attention was drawn to the frequent occurrence of a dermatitis amongst those engaged in gathering and packing the various kinds of daffodil grown in large quantities in the Scilly Islands. A patient who visited that place during the flower season picked a number of daffodils, and developed a rash upon the hands. In writing for advice the fact was mentioned that a so-called "lily rash" was common among the flower-pickers. As the occurrence seemed of interest from a dermatological point of view, the author went to St. Mary's,

the chief island, in order to investigate the circumstances on the spot, and arrived there on March 26th, in the height of the flower season.

The flowers that give rise to the rash belong to the Amaryllidaceae or Narcissus tribe. They are described as lily-like, herbaceous plants, growing from bulbs, with long, sword-like leaves, the flowers with six petals and six stamens, and an inferior ovary—that is, the seed vessel situated beneath and not included within the flower. The last-mentioned peculiarity distinguishes the order from the true lily tribe. The Amaryllidaceae contain many poisonous species; they have all bulbous roots, which are perennial, while the leaves and flower-stems die down each year. The chief species are the Daffodil and the Narcisse. The Daffodil, or *Narcissus pseudo-narcissus* is distinguished by the presence of a tubular or cup-shaped appendage or corona, surrounding the stamens and within the petals. In some varieties it is developed into a long cup, sometimes fringed at the margin. The flowers have a strong scent, and are said to cause headache if inhaled for any great length of time. The bulb and every part of the plant, according to Sowerby and Johnson, are powerful emetics, and the flowers are said to have produced dangerous effects in children who have swallowed portions of them.[1]

The Narcisse is a beautiful species, long naturalized in England, although probably not indigenous. The flowers are pure white, with the small cup-like process, or corona, in the centre, tipped with crimson. It is more poisonous than the daffodil, being powerfully emetic and irritant, especially the bulbs, 30 or 40 grains of which are said to have produced alarming symptoms. The origin of the name is probably from the Greek *ναρκή*, stupor, and not as related in the pretty fable, which says the flower first sprang from the grave of Narcissus.

Bernhard Smith, who has written a small book on poisonous plants, does not classify the vegetable skin irritants separately. Nor does he state the nature of the toxic substance in *Primula sinensis;* for the nettles he gives formic acid, for the poison ivy (*Rhus toxicodendron*) and poison sumach (*Rhus vevenata*) he gives pyrogallic acid. The last-mentioned statement does not agree with the views of recent authorities. Formerly the poison of the Rhus species was generally supposed to be toxicodendric acid, but Pfaff has shown that the irritant is a fixed oil, toxicodendrol, soluble in alcohol and precipitated by lead salts, which is similar to cardol. One is inclined, therefore, to regard somewhat critically the statement of Bernhard Smith,[2] which attributes the irritant o the large and varied family of Amaryllidaceae to "oil of jonquil"; in short, there appears to be no trustworthy account of the chemistry of the Amaryllidaceae.

The "lily rash," as it is popularly called in the islands, is common enough among those who gather the flowers, as well as amongst those who pack them. The flowers are grown for the most part in the open fields, but some early species are forced under glass. They are picked and tied in bunches of twelve blooms each, and these are carried off in large baskets to the packing sheds. At each step of the process the workers are exposed to contact with the plant juices, as well as the flower stalks, flowers, and leaves. Enormous quantities of flowers and leaves are thus dealt with. One of the most expert pickers, for instance, has been known to pick 2 000 bunches of twelve blooms each in the course of a single working day. Sometimes the arms of the workers are bare, and at others covered, but the hands are always exposed. The weather during the flower season is usually mild. At the time of the author's visit, at the end of March, there were some exceedingly hot days; indeed, as a matter of fact, he was attacked with a severe sun dermatitis of the face, neck, and hands. This traumatism of the skin, as will be shown later, is probably somewhat closely concerned with the plant dermatitis.

The rash usually attacks the hands and arms, and not uncommonly the face, to which the irritant may be conveyed by infected hands. At times, especially where there are "cuts" or cracks in the skin, it takes the form of severe local inflammations and ulcers. It may become chronic, or the eruption may generalize. In a few instances the health is seriously affected. The author saw some cases and obtained photographs of others. One of the patients seen had an erythematous eruption of hands and arms. She was a cook, who had recently been picking daffodils in the fields. In another patient the hands showed a condition resembling chronic eczema with rhagades and nail excoriations.

The rash may be described as an erythema of papular, vesicular or pustular type, of varying degrees of severity, at times chronic, and in rare instances generalized.

A good deal of information was gained from growers and workers upon the islands. All were agreed upon the following points:

1. Some workers escape the rash altogether.
2. Some are attacked once only.
3. Some are so susceptible that they dare not touch the flowers.
4. The most severe ill effects are from infected cuts or sores on hands.
5. Some varieties of daffodil and of narcisse are more poisonous than others—the worst being the Campernelle,* a small variety with dark yellow flowers.

1. The fact that some workers escape altogether emphasizes the important part played by individual susceptibility.

2. The observation that some workers are attacked once only is of interest. It may be that the juice has attacked some broken skin surface, or that the individual resistance has broken down under some other special and temporary circumstance. One grower, for instance, stated that he was affected once only, after working all day in the rain. Several other persons mentioned a similar experience as regarded wet weather. It may be that the moisture favoured the absorption of an irritant, or helped to damage the skin and so predispose to invasion.

Another grower said that his nephew, a lad about 15 years of age, was not subject to the rash. On one occasion, however, when working on a very hot day with his shirt open, he scratched the side of his chest, and shortly afterwards "blisters" developed on the scratched area. This observation points to traumatism and direct inoculation of an irritant as possible determining factors. That probability is borne out by the severe results attributed on all sides to the predisposing influence of a broken skin surface.

5. As to the varying degrees of virulence of the different varieties, the daffodils, although for the most part comparatively harmless, nevertheless furnish the plant that is universally regarded as the most dangerous, namely, the Campernelle, a small variety, with deep yellow flowers and small rounded spiky leaves. The degree of virulence in the chief varieties grown upon the islands appears to be in the following order: (1) *D. campanelle;* (2) *N. ornatus;* (3) *N. gloriosa;* (4) *N. Scilly white;* (5) *N. grand monarque;* (6) all other kinds now and then.

Among other interesting facts it appears that dogs are sometimes affected after running amongst the flowers. Horses are sometimes fed upon the plants after they have flowered, and in one instance a horse was seen tethered and browsing in a field of daffodils, apparently without ill effects.

One grower stated that his eyes were always irritated when he went inside a greenhouse where Scilly Whites were growing. Other similar cases were reported; they may be compared with the ill effects recorded by botanists, such as headache and faintness, from prolonged exposure to the scent of daffodils. Another possible explanation is that of pollen irritation, but pollen was found to be negative when applied continuously to an unbroken skin.

An attempt was made to identify the irritant substance or substances causing the dermatitis. At the author's request Messrs. Bullock and Co., pharmaceutical chemists, of Hanover Street, London, made a number of preparations from fresh plants sent over direct from the Scilly Islands. They prepared a succus from several varieties, a tincture from the fresh flowers and flower stalks of the Scilly White, an alkaloid, and a small quantity of an essential oil, obtained from the so-called "essence" or pomade of jonquil. The latter is a delicately-scented grease used in making perfume, and is the only substance approaching the oil of jonquil mentioned by Bernhard Smith, of which no mention could be traced in technical literature.

These preparations were all tested experimentally by the author. They were negative in effect upon the unbroken skin. The oil obtained from the essence of jonquil was negative when inoculated into the surface of the skin slightly scratched with a needle.

Positive results were obtained from the inoculation both

* This appears to be the local rendering of Campanelle.

of the tincture and of succus into a surface lightly abraded with a needle so as to cut through the tops of some of the papillae. The succus reaction was much more severe. The area inoculated, about the size of a threepenny piece, became red and swollen, and a few days later was surrounded by a faint spreading zone of inflammation the size of half a crown. A portion of the central lesion produced by the succus was excised and found under the microscope to contain a very few short Gram-staining bacilli.

The succus was examined by Dr. Eastes, and found to yield a culture of *Bacillus subtilis*, which, being non-pathogenic, may be disregarded; also a few short lengths of mycelium, which could not be grown in culture.

Another substance obtained by Messrs. Bullock was a yellowish powder which separated out from the concentrated tincture. Under the microscope it was seen to consist of masses of delicate needle-shaped crystals. At the time of writing the exact nature of this substance has not been ascertained, but it contains neither oxalic acid nor lime.

The writer, however, is informed by Mr. A. D. Cotton, of Kew, that the order of Amaryllidaceae is characterized by the presence of raphides composed of calcium oxylate. Seeing that the latter is a feeble skin irritant, a possible explanation of the dermatitis may be the mechanical action of these minute needle-shaped crystals on broken skin.

In the case of the pickers the irritant, whatever it may be, acts far more powerfully on the broken skin, according to the unanimous testimony of the pickers themselves—a view that is borne out by the author's experiments. It is further suggested by the case of the single attack of the boy who, after scratching himself upon the chest developed a local crop of vesicles. In traumatism and individual susceptibility, indeed, lie the probable explanations of this particular plant dermatitis. The fact that persons sometimes get a similar kind of rash from handling the bulbs suggests that the irritant may exist in the bulbs as well as in other parts of the plant. Lastly, if we assume that traumatism is essential to the dermatitis, it might in many instances be due to the effects of the sun, which is sometimes excessively hot in the Scillies in the spring.

The precise causative irritant of this interesting rash, then, despite a careful search, has not yet been identified. Indeed, it has not so far been possible to ascertain with certainty whether it is of a chemical or a biological nature. It seems, however, to be probably chemical; and it may be noted incidentally that the succus apparently has a powerful cardiac action, stopping the frog's heart in systole, acting in this way like the members of the digitalis group. The most interesting practical points brought out so far in this investigation are the essential importance of the broken skin and of individual susceptibility as preceding conditions of the development of the dermatitis.

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NOTES ON PALAEOGENESIS.

By Sir Jonathan Hutchinson, F.R.S.

In beginning the observation of the patterns in the skins of animals, it may be convenient to assume that the parent type was a ringed worm. From this we may in bold conjecture pass on to the snake, on which the rings have become lozenges, and the tail differs very conspicuously from the head. In the lizard we see added two pairs of side limbs, and the lower half of the body, or perhaps a much longer portion, is clumsily narrowed to a point and constitutes a "tail." As we progress in the animal scale the tail becomes modified, and is so much narrowed from its base that it looks like an appendage to the trunk rather than a direct continuation of it. Going back to our conception of a cylindrical worm with rings of colour, but without limbs and without modification of tail, we may endeavour to realize what may occur if a distensile integument covering the whole be contracted or cut down at its sides to fit the tail or stretched out to cover the limbs which grow out at its sides. We shall easily see that in the case of the tail the rings will become smaller but may be yet more definite, but that on the limbs they may be variously disturbed in their curves and possibly broken. From their breakage may result bands, streaks, patches, or spots.

It may need some patience, backed by adequate imaginative faculty and some faith, but if these are given, it will probably not be impossible to interpret plausibly most of the various modifications in pattern which the skins of animals display. At any rate, we may feel confident their explanation is to be sought in this direction. It is to be understood from the outset that mere colour is of only secondary importance. It is from its being conspicuous that it is of foremost use in our inquiries, but it may vary with the greatest ease without implying important change. It is the pattern, and not the colour, which we must regard, and the chief use of colour is to show the pattern. It must be understood that the "pattern" implies much more than proneness to peculiarity in coloration. It depends upon modifications in structure which are inborn and inherited, and, although capable of almost endless modifications and often suppressed as regards their manifestations, are never entirely eradicated. It is in reference to their appearance unexpectedly in very remote generations that the word "palaeogenesis" is useful. My chief object in the following pages is to show that there are certain recognizable tracts of skin common to all animals which have their own peculiar endowments. These latter are fundamental, and receive in hereditary transmission modification only.

Coloration—Elementary Observations.

Amongst the elementary facts as regards the coloration of animals we may note first that the integument is patterned in two halves, which meet above and below, and which leave at what might be called their seams of junction longitudinal stripes. It is so common as to be almost universal that there is a stripe down the middle of the back, beginning at the animal's nose and extending to the tip of the tail. This *dorsal stripe* may be narrow or broad, and may be almost endlessly diversified in tint, in size, and in details as to its formation, and by the interruptions to which it is liable. In many cases it is absolutely continuous from nose-tip to tail-end, but in a great number it is interrupted by transverse bars or cut up into spots. Very often it is indistinct or wholly concealed by growths of long hair. In some animals it is prone to peculiar forms of exaggeration either in its continuity or in parts.

On the belly of the animal, from the tip of the lower jaw to the end of the tail, there is very usually a band of coloured hair which differs from the rest but is seldom so well marked as the dorsal streak. It is usually much broader and less well defined than the latter, and very often it cannot be traced from beginning to end. In all cases both the dorsal and abdominal streak should be looked for in young animals, or even in the fetus, as they are often obliterated as age advances. This abdominal streak becomes the "Linea fusca" in the language of gynaecologists, and is usually only a pigmented band from epigastrium to pubes, but by no means infrequently grows coarse hair.

In connexion with the dorsal and abdominal bands there may be developed either long longitudinal ones running parallel to them at variable intervals or vertical streaks coursing down the animal's sides like ribs; these bars may cross each other, and may map out the skin into blocks more or less angular. Of these latter, the angle may often be destroyed, and roundish or oval patches, arranged in lines, may be all that is left. It is by special arrangements of these lines and ribs that the pattern sometimes described as "harnessed" (the harnessed antelope), the conditions known as "brindled," the stripes of the tiger and zebra, the spots of the leopard and the blotches of the giraffe are produced.

Amongst common, but by no means constant, peculiarities in the coloration of animals, several may be mentioned which should, for convenience sake, receive special names. The obliquely-placed elliptical patch on the cheek of the badger, which extends from near the ear, surrounds the eye and ends at the angle of the mouth, can be traced in a great number of animals, with slight modifications as to size, obliquity, etc. It will be conveniently known as "the badger's streak," since it is exceedingly well marked in that mammal. It has not as yet been traced in the human subject in any condition, either in health or disease.

The colour pattern of the face in animals varies exceedingly. Amongst the commonest conditions is the occurrence of a star, usually white, in the middle of the forehead. This star may be a roundish patch, or it may have prolongations from the centre, upwards and sideways, forming a cross or dagger. Its vertical portion may run upwards between the ears over the nape, and downwards to the nostrils. On the sides and across the whole forehead it is often conspicuously developed in domesticated animals, and may be best studied in the horse. In a few very rare examples it has been recognized in the human subject, and in them appears to have been coincident with a patch on the lower lip, involving the chin. In many horses it is large enough to make the whole face look white. In most instances these forehead stars or patches are white, but it must not be assumed that they are always so. A condition which is coincident almost invariably with the white star on the forehead, or the white face, is whiteness of the terminal portions of the extremities. Horses which have large white forehead stars almost invariably have what are known as "white stockings."

What has just been referred to as "white stockings" may be regarded as an acroteric condition, and is very often not coincident with any loss of colour on other parts of the animal's body, with the exception of the tail and the face. On the feet the band of whiteness may be nothing more than a narrowing immediately above the hoof, or it may extend up the manus and pes as high as the knee or hock, and even higher. In wild animals it probably always involves all four limbs, and with bilateral symmetry; but in our horses, and other domesticated animals, it is sometimes not bilateral, and very often it is not symmetrically so. It is almost invariably observed that in the horse the hinder limbs show more white than the fore limbs.

Animals which are striped or brindled on the body usually show rings on the tail. We may regard the tail as being a narrowed prolongation of the trunk, and carrying with it the lateral stripes, both dorsal and abdominal, which then meet and form circles. These rings are almost invariably connected the one with the other by a more or less obscure longitudinal band, the prolongation of the dorsal and abdominal streaks.

The tail, in addition to the rings just described, often displays other peculiarities. Its tip is often tufted with long hair, and very often differs in colour from the rest. So also the body portion of the tail very usually shares in colour with that of the animal's rump. It may, therefore, be described as of three portions whenever it is long, as the rump portion, a long middle portion, and the tip. In the first two of these it presents an upper and a lower surface, whilst at the tip both sides are alike. When the upper and lower surfaces differ, the upper surface will usually resemble the back of the animal in colour, and the under surface the belly. Very frequently the upper surface is black, and the under white, especially in animals having short tails. The rump portion of the tail, when distinctly marked in colour from the rest, usually grows thicker and longer fur. In some cases, especially in the Marsupials, the production of thick fur ends with this part, the rest of the tail being more or less bare and rat-like, and in some instances the line of difference is very abruptly marked. The colour of the tip usually corresponds with that of the animal's nose. In animals which change the colour of their fur with change of season the tip of the tail seldom undergoes any alteration; thus, in the ermine it is coal-black, both in summer and winter.

The central idea of my speculations is that there exists an ancient type pattern, one and the same for the skins of all animals. This does not concern colour only; indeed, colour is one of its most variable features. Colour may be regarded as affording conspicuousness of peculiarity of endowment, but not in itself of much importance. All acquired or individual peculiarities are prone to be inherited for a time, but are all controlled by the primary type. None are really new productions, but all are modifications of what has preceded them. Thus the epidermic horn of the rhinoceros is fore-shadowed in some other animals by a thick indurated patch of skin on the nose. It is an exaggeration, not an absolute novelty.

The nails on the human hand are to be regarded as of very ancient inheritance—palaeogenetic but not aboriginal. A thicker layer of tissue (*stratum lucidum*) is provided on the dorsal tip of all the digits in a vast majority of animals. It becomes modified into claw, hoof, or nail, according to the animal's needs, but is essentially the same. In some animals a claw may be found at the tip of the tail.

Although the arrangement of the skin pattern is almost infinitely varied, and presents often peculiarities which are very difficult to explain, yet we may firmly believe that there is order in the whole. What is wanted is ingenuity and patience in tracing out and comparing different patterns. It will often be found that conditions which at first sight looked very different, on more careful inspection are obviously alike. It is often not easy to say which part of the pattern is ground colour and which the streak or spots.

In order to determine the real markings, it is desirable to see specimens of the animal both when fully grown and when old; also one of each sex at the several ages and under various seasonal states. In the human subject, not infrequently, changes which are associated with those of disease render obvious certain markings in the skin, which were certainly original endowments. The "porcupine patch" is sacral or lumbo-sacral. It is, of course, a modification or development of a special part of the dorsal streak. This patch grows the "quills," whilst the rest of the back produces only coarse hair. In the adult hedgehog the whole back and sides develop spines, but in the young animal only the "porcupine-patch" has spines. There are many transitional forms.

In many animals bristles or very coarse hairs are produced on the porcupine-patch, and even in some human subjects there is a definite bar of strong hair across this region. Virchow attributed the hair-patches which he had observed in this region to defects in the vertebrae, the so-called spina bifida occulta; but the "porcupine-patch" is sometimes present in well-formed spinal columns. It is, I believe, in the human subject, sexual as well as palaeogenetic. I have never seen it in women.

Amongst the zebras the dorsal black streak is often not well marked, and, in contrast with the asses, zebras have almost always dark-coloured noses. It would appear that the dorsal streak is sometimes white instead of black. The bars on the legs, often narrow, circular and strongly marked, are present almost to the hoofs, and on the face almost to the mouth, and are sometimes evident almost to the tip of the tail. There are usually some strong bands near to the shoulder, but no tendency to the formation of a single bar like that of the ass's shoulder streak. A remarkable tendency to equatorial limitation is sometimes observed, especially in the quagga. In the latter, the hind quarters are often free from bars, and the lower parts of all the limbs almost always so. The bars in the zebras vary very much in their width and multiplicity. Almost invariably the bars are curved obliquely over the hind quarters. Burchell's zebra appears to be a connecting link with the quagga.

The hypothesis which I venture to suggest as a convenient one by which to explain the coloration of the skin and appendages of animals in general is the following: An archetype of the cutaneous envelope of the body common to all has been transmitted by inheritance with the most various minor modifications, all of which in turn become modified, and are, when so changed, still prone by inheritance to transmission. These modifications are of the nature either of overgrowths, or of suppressions, and neither the one nor the other is absolutely permanent.

Although, of course, we cannot sustain such a hypothesis, it will be convenient to assume that, at an early period of animal life, the parent form of the infinite variety of beings which we now behold was a cylindrical worm, constructed in rings and without limbs. It had been formed in two halves, one on each side, which had met and joined above and below, thus constituting an upper and under line of juncture. These two halves, although designed to be exactly alike, are not absolutely so, and from the earliest period minute differences may now and then be observed. Thus, all animals are prone to be, from organization, right-handed and left-handed; although the difference may be in most cases not recognizable, it is always present, and is on occasion made evident.

The worm-like body which we have presupposed as original is covered by a wrappage which we call skin, and which must not be thought of as if it were a coating of india-rubber. It is a very complex structure, and contains in itself very wonderful possibilities of growth and development. It consists of several layers, each of which has its own endowments, and it encloses in itself the germs of such structures as hair, nails, glands, and even teeth. It contains also elements which are capable of producing various colours. In the lowest forms of life, and in the earliest stages in all, the skin is closely united with the body substance which it protects, but as organization or age advances, it loses its hold on the bones, muscles, etc., which are beneath it, and becomes movable upon them, and in a sense self-dependent, sharing with them only by receiving minute blood vessels and filaments of nerves. We have supposed our worm-like progenitor to be without limbs, not to be of indefinite length but wholly without limbs, and to show on its outside little more than a long series of rings, more or less coloured and connected both above and below by bands running lengthwise. There comes a time, however, when the animal needs limbs. These are formed by the budding out, from its sides, of structures which have been hitherto hidden. We are not concerned to do more as regards the development of these limbs than to suggest their effect upon the distribution of the colour already present in the skin. The limbs do not form for themselves new growths of skin, but push before them long pouches of the body-skin with its stripes or rings or spots of colour. Although, of course, the skin enlarges by growth, it is at the same time also stretched. The effect of this may easily be understood. It is very common for conditions existing in the fetus, and still present and obvious at the time of birth, to disappear during adolescence. Lambs, even if of well-bred flocks, and destined to be wholly white as regards the fleece, are almost always born speckled with brown or black. This is seen in Southdowns, in which the face remains through life brown. In other cases, conditions not seen at the time of birth, become conspicuous during early life, and may either disappear or persist as adult age is reached.

Palaeogenetic Speculations in Reference to Disease.

The conditions occasionally seen in the human subject in connexion with which I invoke the theory of palaeogenesis are the following: First, unilateral streaks on the neck, trunk, and limbs. To these the term "herpetic ichthyosis," or "unilateral ichthyosis," and many others have been given. Perhaps the term "Biett's Bands," in allusion, I believe, to their first observer, and as not involving any theory of cause, is the best.

Especially we should avoid any adjective implying that they are one-sided, for they are almost always bilateral, although very unequal in their development on the two sides.

All forms of ichthyosis have for their base inborn defect of structure, and are usually palaeogenetic in origin, and the terms which have been applied comparing them to the appearances in various animals, such as "serpentine," "porcupine," and other expressions, are perhaps not quite so entirely fanciful as they have been thought.

The patches which occur in xanthelasma of the eyelids, although they are not present at birth and are not always persistent, have probably their peculiar location in connexion with peculiarity of organization. The tendency to peculiarity of structure in the particular parts affected is revealed in the normal arrangement of colour in some animals.

Leucoderma colli is perhaps one of the conditions which may be the most readily accepted as of palaeogenetic origin. It was the first which drew my attention to the topic. In it the occurrence of diffuse pigmentation appears to reveal the fact that the skin of the neck and trunk, although in health showing no spots or mottling, is really dappled with white.

Naevi, in some of their various forms, are probably examples of local palaeogenesis.

The diffuse melanosis of the mouth occasionally seen, and which has been observed occurring congenitally in two sisters, is another good example of the same tendency. The mouth changes in Addison's disease, and in what is sometimes called "black tongue," and is often a racial peculiarity, must be placed in the same category.

Palaeogenetic influences in all probability take a considerable share in the definite localization of many maladies. In the condition to which the term "sycosis keloid" is given, we may suppose that it is the survival of structures which constitute the mane in animals which supply the site. These conditions occur only in the male sex and in adults, and occupy the base of the neck and nape, sometimes extending on to the scalp, and in a scattered manner down the back and shoulders. The indolent pustules which give rise to the keloid condition are probably developed in what remains of the pilo-sebaceous system of these regions. A remarkable tendency is often displayed to gather the hairs of the parts into tufts, like those of a scrubbing-brush, a condition sometimes seen, I believe, in the horse's mane—several hairs making their exit at the same orifice.

THE TREATMENT OF SOME SKIN DISEASES BY VACCINE-THERAPY.

By J. L. BUNCH, M.D., D.Sc., M.R.C.P.,
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ALTHOUGH within the last year or so vaccine-therapy has been adopted for the treatment of widely differing forms of disease, its development and still more extended use will depend largely on the lessons which have been and are still being learnt from its employment in diseases of the skin. It is, of course, evident that the immediate effects of treatment by vaccines can be more readily studied in affections of the skin than in diseases of internal organs; and such treatment of skin diseases must always serve, as it were, as a control, even if the method of vaccine-therapy does not stand or fall according to its ability or inability to cure, or at least alleviate, some cutaneous diseases. It would appear to many presumptuous to talk of curing malignant endocarditis, enteric fever, and pneumonia by the injection of vaccines if no good effect could be obtained by vaccines in simple cases of staphylococcic affections of the skin such as boils, tuberculous affections such as lupus vulgaris, streptococcal affections such as impetigo contagiosa, to say nothing of acne vulgaris and eczema.

The cure, or want of cure, of such skin affections is plainly before our eyes, and of the result there can be no two opinions, and it is easy to judge the effect of any injection of a vaccine on an uncomplicated and otherwise untreated skin disease. That favourable results have been obtained in a number of cases treated by vaccine-therapy is, I think, undoubted, or the method would have already fallen into disuse; and I might perhaps refer here to some papers on skin cases treated with vaccines by Pernet and myself in the *British Journal of Dermatology* of October, November, and December, 1906, and by myself in the *Lancet* of January 19th and March 23rd, 1907. These cases include tuberculous, staphylococcal, and streptococcal affections of the skin, and the results were good; but, however enthusiastic I might be, I should expect many to dissent if I stated that every such tuberculous, staphylococcal, or streptococcal skin disease can be cured by vaccine-therapy. Our experience of the method is, of course, greater every day—of its limitations as well as its possibilities—and our successes ought in the future to be even greater than in the past.

When we bear in mind that the power of reaction of the patient sets us one very definite limitation, and that even after correctly diagnosing one infection we must not forget the possibility of a second coexisting infection—in other words, a mixed infection—we see some of the reasons why vaccine-therapy is not uniformly successful, even when the right vaccine and the right dose have been administered.

As an example of this mixed infection, I might mention a case of a patient with ulcerating lupus vulgaris of some years' standing, who had been treated with *x* rays with little improvement, and whom I treated with tuberculin injections for six weeks without doing much good. Cultivations, however, showed a well-marked coexisting staphylococcal infection, and injections of a staphylococcal vaccine in addition to the tuberculin produced so great an improvement in the patient that he was sent back to the country almost cured. He came to the hospital again at the end of two months with the lupus lesion quite broken down and in a condition as bad as when he was first seen.

Cultivations now showed that while at home he had contracted an infection with *Bacillus coli*, and it was not until *coli* vaccine was injected that the lupus finally cleared up.

Then again, the determination of the dose of vaccine is sometimes far from easy, and a patient who shows no improvement with a dose of, say, $\frac{1}{5000}$ mg. tuberculin may respond satisfactorily to the much smaller dose of $\frac{1}{20000}$ mg.

I remember the case of a patient with acne vulgaris who had been treated elsewhere for some time with staphylococcal vaccines in varying doses without benefit. When he came under my care I found his opsonic index to staphylococci to be 1.45, so I gave him an injection of 20 million acne bacilli. This caused a great improvement, but a repetition of the dose at the end of three weeks had no good effect, and it was only when, after several similar failures, I reduced the dose to 5 million bacilli that the lesions began again to improve, and finally cleared up.

The treatment of localized streptococcal infections does not always necessitate the use of vaccines, but some cases with rapid spread of the infection respond well to inoculation. I include here those cases of erysipelatous inflammation where the streptococcus has entered through a mucous membrane, or an abrasion at the junction of skin and mucous membrane, and which resist external applications and the injection of weak carbolic acid solution at the spreading edge. A more unusual case which came under my care was that of a man who was bitten on the hand by a cat, and developed a dermatitis spreading from the wound which involved the hand and afterwards the forearm with a considerable amount of oedema. A pure culture of *Streptococcus pyogenes longus* was obtained from the wound discharge, and also from an incision in the arm, and his opsonic index to streptococci was 0 53. Of a vaccine prepared from this culture I gave him first a 5-million dose, and six days later a 10-million dose, increasing the dose afterwards to 50 million. The wound was also scraped and the arm incised, and this, of course, helped; but I certainly think the return of the opsonic index to normal, and the rapid cessation of spread of the dermatitis were assisted by the employment of an autogenous streptococcal vaccine. The initial dose of 5 million may sound a small one, but it is a good working rule to inject fewer dead cocci in proportion as the inflammation is more acute. This applies not only to cases of direct streptococcal infection by traumatism, as in the last case, but also to other spreading erysipelatoid streptococcal infections, where the site of inoculation cannot be so definitely determined. While on the subject of streptococcal infections I might mention a peculiar case where, in a patient with an opsonic index of 0.62, the first injection of an autogenous vaccine of only 5 million streptococci was immediately followed by a typical outbreak of herpes zoster. The injection was given in the forearm, and the herpes zoster was in the distribution of the second and third dorsal nerves. There was a considerable amount of pain and resulting insomnia, and the patient was incapacitated for about ten days. You will most likely say it was a mere coincidence, and so it probably was, but I should like to know whether any similar coincidence has occurred to the knowledge of anyone present.

Pneumococcal and gonorrhoeal infections of the skin are rare and usually secondary, but I might draw your attention to the fact that, especially in the case of gonococci, there seems to be a great difference in the virulence of different strains. Thus, a vaccine prepared from one patient and used with success in him may, in a second patient, produce a marked local reaction, even when given in the same or a smaller dose. I am speaking now of the clinical appearances only, for the effect on the opsonic index of the two patients may with the same dose be similar, but nevertheless it is wise to diminish the dose in the patient who shows such well-marked clinical reaction.

I do not propose now to discuss the nature of opsonins, whether they are lytic antibodies under another name, or what is the relation of the thermolabile opsonins of normal serum to the thermostable bacteriotropins of immune serum. It is, however, important to remember that opsonins neutralize the repellent power of the pathogenic bacteria on the phagocytes and enable these latter to ingest them and render them inactive. Still more important is it to know whether we can accurately measure the opsonic content of the serum and whether the opsonic index is a reliable guide to such measurement. It has certainly been shown that, even in the hands of very capable observers, the opsonic index is not entirely trustworthy, and it has been argued that attention to clinical symptoms and temperature is a more reliable means of determining the correct dose of a vaccine and the most suitable intervals between the injections. But, inaccurate as the method is in any hands, I maintain that it is at the present moment the most reliable method we have of determining the opsonic content of the serum, and therefore may still be regarded as at least a useful guide.

As to the administration of vaccines by the mouth, this method has in the hands of Leishman and others proved unsatisfactory, and only introduces unnecessary complications. Personally, I never employ it.

In conclusion, I do not think that the vaccine method is perfect, nor do I think it is incapable of improvement. I think it probable that, in the future, antibodies will be increased in the organism by other methods than the injection of dead bacilli. It may be that the phagocytes will be stimulated or the repellent powers of the bacteria neutralized by the injection of sterile modified serum. But, for the present at any rate, dermatologists will still employ vaccines, and it is in their hands and in skin cases that the best results with vaccines will be obtained.

CUTANEOUS DIPHTHERIA.

By G. W. DAWSON, F.R.C.S.I.,
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IT has always been recognized that diphtheria may attack an open wound of the skin; but whilst it was common during the epidemics which took place in the early part of the last century, it is now comparatively rare and almost forgotten. So long ago as 1759 Chomel mentions the disease, and later, in the year 1828, Trousseau pays a good deal of attention to it. According to this authority, it never develops on the skin unless the epidermis is removed, and the lesions he describes as being affected by diphtheria are blisters, leech bites, herpes, etc. He describes the appearances of a wound when affected by this disease. It becomes painful and gives rise to a fetid serosity, with the gradual formation of a greyish membrane. For this type of case his description still holds good, but the appearance of the membrane was evidently necessary for the diagnosis of the disease.

Within the last few years a considerable number of cases of cutaneous diphtheria have been reported. Of the 10 recent cases which I shall mention later I have seen 4, and in 9 of them there was no membrane or other usual manifestation of diphtheria—an important fact when we come to consider the virulence of the causal agent and the danger to the community from the dissemination of such a fatal organism. It is obvious that this class of case is much more important than those which are associated with diphtheria of the throat or the formation of membranes in other parts of the body—conditions so well known as to lead to a speedy diagnosis; whilst other cases, by reason of the absence of those well-known clinical signs, continue to spread far and wide one of the most virulent and fatal organisms known to mankind. I believe that time will show that this type of disease is not so rare as the few cases recorded would lead us to suppose.

All but 2 of these cases occurred in children; 4 of them ended fatally, 7 of them were of an impetiginous eczematous type, and in 3 of them there were vesicles and bullae which gave rise to a profuse discharge. Four of them had severe conjunctivitis, with copious serous and purulent discharge.

The commonest and therefore most typical form occurs in children, and has the appearance of an impetiginous eczema, nearly always affecting the head and face, and associated with severe conjunctivitis, sometimes with otorrhoea and rhinitis, the whole forming a clinical entity from which a diagnosis may be deduced with some degree of confidence.

The diphtheria bacillus has been described in a number of cases without any reference to its pathogenic properties; but certain harmless diphtheroid organisms are so common that no case can be considered unless the

organism is put through its cultural tests, and above all, its virulence to laboratory animals proved.

As will be seen by some of the subjoined cases, cutaneous diphtheria may be very resistant to ordinary treatment lasting sometimes for years, while it invariably responds to antitoxin.

Whether the disease is due to diphtheria in the first instance or is merely an accidental inoculation of a preceding eczema, or conjunctivitis, or, as in one case I am about to mention, a bullous eruption such as dermatitis herpetiformis, is a matter for investigation and discussion. I am inclined to support the ancient view of Trousseau that a damaged epidermis is necessary for the invasion of the skin by diphtheria.

CASE I.

A. J., aged 4 years. This child only came under my care a few days ago; I am therefore fortunately able to show him to the meeting. He is one of three children, one of whom has eczema and rickets. Two years ago he was severely burnt about the face, for which he was in hospital twelve months. At the beginning of this year he had a convulsion and the scar of the burn began to ooze, there was also a little eczema behind the ears for some time. In February he developed an eruption over the trunk and to a lesser extent on the limbs. He was then a bright and intelligent child. The rash became moist and of an impetiginous character, and remained more or less the same till the month of June, when the right eye became inflamed and he got a running from the nose. On July 1st he was very much worse, pus streaming from the eyes, face much inflamed, and discharge from the left ear. The eyes were so swollen that they could not be opened. On July 16th the Klebs-Loeffler bacillus was discovered by Dr. Hare.

CASE II.

A man, 58 years of age, came under my charge last October, with numerous cherry-sized bullae at the base of the neck, both arms, and one on each outer canthus of the eye. They were for the most part grouped, and appeared rapidly on an erythematous base, and ran their course in about a week. The eruption began three months previously and was intensely itchy. The case was looked on as one of dermatitis herpetiformis, and arsenic was given internally and sulphur ointment rubbed into the affected places. He improved for some time, but after a month's treatment was as bad as ever. The contents of a recent bulla were examined by Dr. J. G. Hare, and smears made on agar-agar and blood serum, when a pure culture of the Klebs-Loeffler bacillus was obtained. Two guinea-pigs were inoculated, one with 0.5 c.cm. of broth culture of the bacillus and the other with 1 c.cm. Both died within twenty-eight hours. Two other guinea-pigs were then inoculated with 1 c.cm. of the emulsion and 1 c.cm. of antitoxin (diphtheria); they both lived.

Treatment.—Antitoxin was injected on the following dates:

November	17th	4,000 units.
,,	20th	4.000 ,,
,,	27th	4 000 ,,
,,	30th	4,000 ,,

He improved very much after the second injection and the severe itching completely disappeared; no fresh places came after the last injection. The case is remarkable in that clinically and microscopically it was one of dermatitis herpetiformis and bears no clinical resemblance to the other cases of this group.

CASE III.

This little girl, aged 18 months, whose photograph I show you, was a typical case of the disease, so typical that the diagnosis was arrived at from the clinical appearance alone. You will see by the picture that the scalp and face are covered by a moist impetiginous eruption. The eyelids are so swollen that the palpebral orifice is completely closed, and from them there came a copious purulent discharge. Her temperature was 103°, and her pulse 126. The diphtheria bacillus was obtained by Dr. Hare. Unfortunately the child died within twenty-four hours.

CASE IV.

Dr. Slater reported the case of a girl aged 13, who, three years before coming under observation, had suffered from inflammation of the eyes and white patches on the vulva with the formation of blisters around the latter. For this condition she was in a general hospital for five months, without much benefit. Loeffler's bacillus was obtained from the serous fluid dripping from her face, on which were numerous vesicles. The injection of antitoxin was quickly followed by a cure.

CASE V.

Dr. Eddowes reported the case of a girl aged 11 years, suffering from bullae on arms, hands, and lips, with traces of a ruptured vesicle on the fauces. Streptococci and staphylococci were obtained at first, but later Loeffler's bacillus was discovered in the roof of the bullae. This case recovered by the application of antiseptics.

CASE VI.

In a woman 21 years of age (reported by Dr. Eddowes in the BRITISH MEDICAL JOURNAL), who had an impetiginous eruption for three years, for which she was treated in a large general hospital. Loeffler's bacillus was obtained from the fluid which streamed from her eyes. She was very ill, but the injection of antitoxin had a magic effect, most of the eruption clearing up in a week.

CASE VII.

Labbé and Demarque describe a child of 4 years with a disseminated impetiginous eruption, in addition to which there were a number of sharply defined ulcers. Loeffler's bacillus was discovered, and the administration of antitoxin was followed by a cure.

CASE VIII.

The same gentlemen describe another case in a child 2½ years of age. There was impetigo of the scalp and face with excoriation of the lips. Loeffler's bacillus, as well as the staphylococcus and streptococcus, were obtained. Death took place from pneumonia.

CASE IX.

Schucht's case was aged 3, had infantile ecthyma with sharply circumscribed ulcers and a purulent discharge from the ear. This child died of tuberculosis and meningitis.

CASE X.

Dr. Bolton described a case in a child aged 1½ years, with a gangrenous patch in the groin, surrounded by an inflammatory areola. No membrane was observed, but the bacillus of Loeffler was obtained. There was vomiting and abundant albumen in the urine. The child died in the forty-first day of the disease.

DISCUSSION.

Dr. GEORGE PERNET (London) remarked that he had had an interesting case under his and the late Dr. Radcliffe Crocker's care some years ago and bearing on the subject under review. The patient was a young child who came under observation for a gangrenous lesion near the anus. It was treated by local injections of carbolic acid and did very well. But whilst the child was recovering from the skin trouble, which was nearly well, it was noticed by the nurse that the child was not swallowing its liquids and liquid food properly. This was found to be due to paralysis of the palate. The idea of the skin lesion being of a diphtheritic nature came immediately to the speaker's mind. The child was injected with antitoxin with as little delay as possible, but unfortunately with no beneficial result, as paralysis of the diaphragm and death soon ensued.

Dr. WALSH (London) said that the cases recorded suggested that present views on the subject of diphtheria required to be revised, while they also emphasized the close connexion between dermatology and general medicine. Some years ago, when clinical assistant in an East End hospital, he had seen a fair number of cases of conjunctival diphtheria in which no signs or symptoms were present except a membrane containing specific micro-organisms. These cases, however, developed paralysis.

Dr. DOUGLAS HEATH (Birmingham) said he had seen diphtheria of the skin in cases recognizable before cultures were taken. In one case, in a child aged 3 years, an impetiginous eruption was present over the whole body. In the groin was a large ulcer covered with a grey membrane. The Klebs-Loeffler bacillus was easily found in the membrane from this ulcer. The child made a very good recovery.

Dr. W. GRIFFITH (London) laid stress on the importance of differentiating between diphtheroid and the true Klebs-Loeffler bacillus, and that no case should be accepted unless the bacillus was pathogenic to animals under the conditions applicable to the Klebs-Loeffler bacillus generally.

Dr. R. PRICHARD (Cardiff) said that the cases brought forward were of much interest and importance to public health officers. Such cases might be a cause of the spread of ordinary diphtheria. Some years ago he had seen a case of a patch of eczema under the left ear in a young girl. This spread across the cheek in a streak to the angle of the mouth and formed a greyish membrane on the buccal surface. This gave the Klebs-Loeffler bacillus. The case rapidly improved with antidiphtheritic serum, but a younger sister contracted typical diphtheria.

THE USE OF SOLID CARBON DIOXIDE IN DERMATOLOGY.

By EDWARD REGINALD MORTON, M.D.Toronto, F.R.C.S.Ed.,
In Charge of the X-ray Department, West London Hospital; Lecturer on Radiology, West London Post graduate College: Vice-President, Electro-Therapeutical Section, Royal Society of Medicine.

THE use of solid carbon dioxide was first introduced into therapeutics by Dr. W. A. Pusey, of Chicago, about three years ago, and it was brought to my notice in June of last year by Dr. Geyser, of New York. As a rule I, in common with many others, look askance at most new therapeutic agents, and with reason; but I may say that in this case I was attracted to the substance at once, and in all my experience I cannot recall a single instance where extensive application of a new therapeutic agent brought out so much that is satisfactory and so little that is disappointing.

The principle involved is that of refrigeration; but the process is not one of simple freezing as ordinarily understood. In ordinary freezing, where the temperature of the frozen part seldom falls more than a few degrees below 0° C., and lasting for a few seconds or perhaps a minute or two, the subsequent effects are comparatively trifling and bear little resemblance to the reaction that follows an application of solid carbon dioxide. As CO_2 has little or no local action of its own, we are safe in assuming that the effects obtained are due to the low temperature to which the tissues are subjected, and to that alone.

We may consider for a moment what most likely takes place when a tissue cell is subjected to such severe congelation. As the temperature falls to freezing point, the first effect is that the cell becomes a solid instead of a semifluid body, and possesses rigidity. Owing to the expansion that water undergoes as its temperature falls below 4° C., something must give way, on the same principle that a bottle full of water is cracked if left out of doors on a frosty night. It is not necessary to dwell any further on this point before an audience of this kind, and I am sure it will be agreed that it is a safe assumption that the individual cells suffer mechanical injury, and although the injuries will probably be of microscopic or ultramicroscopic dimensions, they will be none the less potent to bring about the immediate and profound reaction that follows.

When we read papers by experts in radio-therapeutics, we find frequent reference to the "selective action" of the rays under consideration, as if this were a wonderful property not found elsewhere.

Personally, I am of the opinion that this is a case of "putting the cart before the horse," and that the reason abnormal cells are removed before the healthy ones is due to their lower vitality and resisting power. Given an area consisting of normal and abnormal cells, and apply to it anything that has a tendency to destroy them, whether it be x rays, radium, or solid carbon dioxide, the abnormal cells will disappear first, not because the particular agent employed has a selective action, but on account of the low resisting power of the unhealthy cells.

The curative action, then, of solid carbon dioxide is an indirect one; it causes damage to all the cells that come within its influence, but, so long as the application has not been unduly prolonged, only the abnormal cells are unable to recover. They die and are removed by phagocytosis. This introduces the important question of dosage.

No hard and fast rule can be laid down, as every case must be treated on its own merits. The only factors to be considered are those of time and pressure. The average length of the application is from thirty to forty seconds. If a very slight and superficial reaction is all that is required, ten seconds will be long enough; if one is treating a hard, dry, common wart, the application may have to be prolonged for two, three, or even four minutes, owing to the badly conducting properties of the growth. The amount of pressure to be employed is very difficult to define, and it is just here that a little practice and following up the results will teach one more than anything else. Speaking generally, if a vascular growth is to be satisfactorily dealt with, the pressure should be sufficient to arrest the circulation; if this is not done the result will be disappointing. The depth to which the freezing action extends is a question of pressure and the time it is kept up. Where the bone is near the surface it is quite easy to freeze the soft tissues to it. This often happens when treating naevi of the scalp, and such cases usually do very well, no doubt because it is so easy to be quite sure that the freezing has been thoroughly carried out. Very light pressure has practically no action, on account of the rapid evaporation of the CO_2 in its return to the gaseous state. For this reason it is possible to handle a piece of the solidified gas without discomfort. If a piece be put on a smooth and slightly inclined surface, it slides down the slope with a rapidity out of all proportion to the degree of inclination. It will thus be seen that a certain degree of pressure is necessary to overcome the insulating effect of the gas that is given off so rapidly from the surface of the crayon. The rapidity of the evaporation is seen when a piece is immersed in water, but unless it has been compressed very hard it will not sink. Personally I prefer the crayon made so hard that it sinks readily in cold water, but it is not necessary to have it as hard as this to get good results.

Effects of the Application.

I shall only describe here what takes place in an average application for a naevus, of thirty seconds' duration, with firm pressure. On removing the crayon the depression made by it remains, and the depressed surface is white and hard, just like a piece of porcelain. The part returns to its normal shape in a time that varies from two to three times that of the application itself. When the thawing is completed the surface is found to be covered with the moisture of condensation.

The reaction sets in almost at once, and the part is within a few minutes of a firmer consistency, and beginning to swell. A wheal quickly forms, and is well developed within an hour. Vesication almost always follows an application of twenty or more seconds. This may be relieved with a sterile needle, and should be dressed with some antiseptic ointment. A crust forms in about five days, and in most cases this should be allowed to come off of its own accord. After a properly made application of solid carbon dioxide there is no necrosis or sloughing; an intense reaction is set up, in the course of which the diseased, or at least abnormal, cells are removed. If it is desired to produce sloughing for any reason, this can be done by making a second, and even a third, application after the first has thawed out. An application made on the following day also intensifies the effect very considerably. I have found this procedure of use in treating fleshy moles, which are, as a rule, very resistant.

The action of carbon dioxide in no way resembles that produced by caustics, as some have supposed without giving very much thought to the matter. Caustics destroy tissue more or less immediately, mostly by virtue of their strong affinity for water. When necrosis follows an application of solid CO_2 it is a result of the inflammatory stasis induced by a very prolonged freezing, and one that is in the great majority of cases quite unnecessary.

In view of what has been said I think you will agree that in carbon dioxide we have a means of setting up a reaction in living tissues that may be controlled to almost any degree that may be desired, and so long as the application is properly made there is no danger of any gross destruction of tissue. Owing to this latter fact the scars following these applications are as nearly like normal skin as is possible to attain by any other means.

There is much more that I could and would like to say about this fascinating substance and its therapeutic value, but I must not take up the time of the Section any further in this way.

I shall now pass on to give a brief account of the results I have obtained in the treatment of the various cutaneous disorders where it has been used. My most extensive experience has been with naevus in all its varieties. These cases are very satisfactory for the trial of a new agent such as the one we are considering. They occur in all degrees of thickness, and, while the great majority show no malignancy, they do not disappear unless thoroughly treated, and it is comparatively easy to know whether the desired result has been obtained.

The simplest type is that known as the capillary naevus, and I have found it possible to cure no less than 90 per

cent. of my cases with a single application of solid CO_2, and this without the need of an anaesthetic in any one of them; in fact, I never require an anaesthetic for any of my cases, and once patients see what a simple and almost painless procedure it is they prefer not to have it.

A few cases of this type of naevus had to have a second or even a third application to make a good result, but they form a very small proportion of the whole. I may mention here that, as there is no normal skin covering the ordinary capillary naevus, the resulting scar is not so good as in others. It gives a very poor foundation to work upon.

In the cavernous type the result is, as might be expected, not so good; but even here 65 per cent. were completely cured by a single application, and in only 10 per cent. of all cases had the method to be supplemented by electrolysis. With regard to "port-wine marks," my results have not been very much better than those obtained by other methods; at the same time I feel sure some more or less simple modification of the method will bring better results. I am now experimenting with short applications of about ten seconds, with a moderate degree of pressure, and I have reason to think the result will be better than anything else that I have tried for this most troublesome form of naevus. In any case the applications have to be repeated from time to time. Little or no effect follows the first treatment, but is generally very noticeable after the second or third.

In the treatment of lupus vulgaris I have had results that are so far distinctly encouraging. With this method there seems to be little difficulty in getting the part to heal up and become to all appearances cured. Most of them had but one application, but a few have been treated several times. Freezing has been found satisfactory for this disease on the Continent, and there is no reason why this form of freezing should not be equally successful. I hope to report results after some considerable time has elapsed. In dealing with such cases I carefully remove all crusts, and clean the surface before applying the crayon. This should be done with firm pressure for about forty seconds, and antiseptic dressings used subsequently.

With regard to lupus erythematosus, there is no doubt that solid carbon dioxide has a very definite value. As the disease is a very superficial one only short applications are called for, and the lesions as a rule heal up fairly rapidly. The same can, of course, be said for other remedies, and I do not say that this method is more satisfactory than others that have been tried. It is at least as good as any other local application, and forms a useful alternative.

For moles and warts this method is, in my experience, easily the first; a successful result should follow a single application in nearly all cases. The fleshy mole gives the most trouble, probably because it is necessary to destroy some tissue and not merely alter its character.

In treating these the growth must be thoroughly frozen, and in the case of a dry common wart we must also freeze a narrow zone of the healthy tissue around the base; this may take as long as three or four minutes, but if it is not thoroughly done the result will not be satisfactory.

It is interesting to state that, in treating a hairy mole, the hairs are removed, and do not return for a considerable time at least. This is a point where more time is required to determine the truth. As a method of treating hypertrichosis it is not to be recommended.

The list of diseases and disorders to which this agent may be applied with benefit will almost certainly be very greatly extended. Most dermatologists are very busy with other things, especially radium, and until this enthusiasm subsides, as it undoubtedly will when they find out the truth, then perhaps solid carbon dioxide will receive the attention it deserves. Being a radiologist rather than a dermatologist, I do not get the best opportunities for trial on an extended scale, and I may say here that had it not been for the great kindness of our President, Dr. Abraham, my experience would have been much more restricted.

Before concluding this paper I wish to mention what I have done in the way of treating rodent ulcer by this method. At first I hesitated to use it until my experience had been somewhat extensive, and for the first trial I waited until a favourable case presented itself. In testing a new mode of treatment I think it only fair to select favourable cases for the first trials; using the most severe cases for this purpose is likely to engender a prejudice against the agent in question that may be entirely unwarranted. For these reasons I did not attempt to deal with a rodent ulcer with solid CO_2 until about two months ago, and I have now treated four cases, two of which I am glad to be able to show you to-day.

The first one (female) was about the size of a sixpence, and situated just above the zygomatic arch, and its characters were that of a typical rodent ulcer of six years' duration. It was referred to me by Dr. Abraham. On April 29th last I scraped away the granulation tissue and then applied the CO_2 with firm pressure for forty seconds. It was entirely healed on May 23rd. This is over two months ago. I think you will agree that the result is all that could be desired.

The other case (male, aged 59 years) was referred to me by Mr. Etherington-Smith. He had a typical rodent ulcer on the left side of the nose, and was in the shape of a square or parallelogram, with its sides about $\frac{3}{4}$ in. long. The method of preparation and treatment was exactly the same as in the former case. This was on June 29th, 1910. On July 20th it was healed over, except for a small spot about the size of a pin's head. You now see the case four weeks after treatment. Here again I think it will be agreed that the result is satisfactory. In both cases a simple boric acid ointment dressing was all that was used.

The other two cases were private patients, but were small ulcers having no unusual features, and the result was equally satisfactory. A noteworthy feature of all four cases was that there was not the slightest hesitation about the healing process; seldom if ever have I seen ulcers heal so rapidly and completely. The case of the man I show you had lasted for three years, and was slowly but steadily increasing in size. Following a single application of solid CO_2 it was entirely healed after twenty-one days. I very much doubt if any other method can show such advantages as this in the treatment of rodent ulcer. The question of permanence has yet to be settled, but I have little doubt on this point. Unless the unhealthy cells were all destroyed and removed I do not see how such rapid and complete healing could take place.

In conclusion, I hope I have succeeded in making out a good case for the use of solid carbon dioxide in dermatology. I have now treated considerably over 2,000 cases of naevus by various methods, and while electrolysis, the cautery, the high-frequency spark, and radium have their uses, and are to be preferred in a small proportion of cases to meet special conditions, solid CO_2 is the most useful of all, as well as the most satisfactory; and not the least satisfactory feature of this agent is that it has shown itself capable of successfully dealing with some of those conditions which have been thought to be the peculiar province of radium. This is a great gain and one of much importance to a large section of the public. Radium is ruinously expensive, and treatment with it is very prolonged in most cases. In a very large number of cases solid carbon dioxide will answer equally well with a great saving of time and money.

[On the conclusion of his paper Dr. Morton demonstrated the preparation of carbon dioxide crayons and various members showed the working of sundry appliances which have been introduced for the purpose.]

THE TREATMENT OF X-RAY BURNS.

By Alfred Eddowes, M.D.,
London.

The chief object which the author has in view is to call attention to an operation which he has introduced for the relief of bad cases in which painful ulceration has occurred and proved rebellious to ordinary treatment. Slight cases can be easily managed by the application of fomentations, lotions, and pastes of various kinds, and Unna's zinc-gelatine.

For some of the chronic cases, particularly those commonly involving the backs of the hands in *x*-ray workers, he has found few remedies to equal compound tincture of benzoin. It is a common thing to see bleeding and painful chaps on the hands of such operators. If the affected hands be closed so as to gently open the cracks, the tincture runs in and fills them up. The dressing has a

certain flexibility when dry, which is of advantage, and its colour tends to exclude light. After the dressing has dried, of course gloves should generally be worn. In severe cases, where there is pain, rigidity, and ulceration, it sometimes happens that the ulcers heal but slowly, if they heal at all; and, if healed, easily break down again. When first confronted with this difficulty, he thought of Hilton's method of treating irritable ulcers by section of nerves near the tender spot, but the problem was greater than that which Hilton had to solve, because in *x*-ray ulcer the parts around for some distance are involved in a condition of fibrositis. Those who have examined such tissue will recognize that all epidermal appendages—hair follicles, sebaceous glands, sweat glands, and ducts—are squeezed right out of existence. That there must be also injurious tension on the nerve fibres is beyond question, but as the surface of the ulcers is exquisitely tender, especially at certain spots, there can be no doubt that the nerves do still exist in the tissues, though their function is profoundly disturbed.

Before resorting to the knife for the treatment of this morbid tissue the following questions had to be answered: If cutting across the nerves will give relief, where should the cuts be made, in what direction and to what depth, and how many? Secondly, if incisions are so made as to relieve the pain and tension, will the tissues live or slough, and can we rely upon new granulations filling and effectually repairing the gaps? All surgeons will have observed what great vitality there is in thick skin flaps either caused by accidents or by the surgeon's knife, even when they have to depend for a time entirely on a recurrent circulation supplied from a distal attachment. In the face of the great suffering endured in bad cases, the attempt seemed justifiable. Many of those present have probably read a paper published by Dr. Agnes Savill in the BRITISH MEDICAL JOURNAL for December 18th, 1909, describing one of the first cases operated upon by Dr. Eddowes. In that case there was extensive *x*-ray burn in which a line of ulcers existed from just above the elbow almost as high as the shoulder-joint. Several curved incisions, across and between these ulcers, were made, with the object of cutting all the cutaneous nerves which were either involved in the ulcers or the dense tissue around them. All the ulcers did well and healed except the upper one; this from time to time was still a little painful, and would not remain healed. The reason was not far to seek. It had not been sufficiently recognized that a good portion of the skin over and around the deltoid muscle was supplied by nerves coming round from the brachial plexus, behind the humerus, and running almost transversely across the limb. It therefore occurred to him that a second and more complete operation for the remaining ulcer should be carried out. A semicircular incision was made through the tissues near the ulcer, so as to sever any branches of nerves passing transversely through the subcutaneous cellular tissue, or directly through the fascia, to the base of the ulcer. As soon as the incision was made, it was clearly shown by the contraction of the flap that there had been a considerable tension in the morbid tissue.

The diagram laid before you illustrates how the nerves run in the upper arm, and therefore how the incisions in that part should be made to cut them. The flaps or undercut portions must have, of course, sufficient distal attachment for efficient circulation to be carried on till the granulations tissue can help in blood supply. Where there is deep subcutaneous tissue the incisions can be deep—say to the fascia—but they must not be too close together. Each case must be anatomically and otherwise considered on its own merits.

Not only, as in the above-mentioned case, do incisions relieve pain and tension, and cure the ulcers, but they also, by bringing in extra new tissue, increase the mobility of the parts.

DEMONSTRATIONS.

DURING the course of the meeting a number of cases of interest on account either of their course or their rarity were demonstrated by various members of the Section. They included 3 cases of leprosy shown by the President of the Section, Dr. Phineas Abraham.

SECTION OF TROPICAL MEDICINE.

FLEMING M. SANDWITH, M.D., F.R.C.P., Gresham Professor of Physic, President.

PRESIDENT'S INTRODUCTORY REMARKS.

AFTER a few initial observations, Dr. SANDWITH said:

Exactly fifteen years ago, when the British Medical Association last held a meeting in London, the work was divided into fifteen sections, but it was only in one of them, that devoted to pathology and bacteriology, that any question was raised of tropical interest. The programme of that Section announced three papers bearing on tropical subjects, two of which (on leprosy) do not seem to have been published; the third, some of you may remember, was a demonstration of the parasite of malaria by Dr. Patrick Manson, and this was accompanied by a paper dealing more especially with the life-history of the parasite outside the human body. On that occasion the Nestor of tropical science pointed out the probability that the mosquito was the intermediate host of the parasite, while he drew attention to the work of Major Ross in India.

I need not remind you of the progress in the world's history which tropical medicine and hygiene have achieved since that date. There have sprung into being, as a necessary part of our equipment, two tropical schools in this country, elementary tuition in tropical medicine at many medical schools in the kingdom, an honourable acknowledgement of the subject by four British universities, the regular inclusion of a Tropical Section at these annual meetings, the formation of national societies of tropical medicine in many countries, and the growth of an international society which has for its aim the knitting together of tropical workers all over the world. In this great metropolis we are proud to remember that other famous countries have paid us the compliment of following in our steps, and among the tropical schools of later development there is none of higher repute than that of Hamburg, worthily represented here to-day by Professor Fülleborn.

The past year has yielded us a rich harvest of accumulated knowledge from the tropics, some details of which we shall now have the opportunity of hearing from those who have taken a principal part in unravelling the tangled skeins of microbic diseases.

The officers of this Section had hoped to obtain some first-hand information from those who have succeeded so admirably in making the Panama Canal zone and Cuba habitable places for the white and the coloured man, but unfortunately neither Colonel W. C. Gorgas nor Colonel J. R. Kean could be spared from their official duties during this month.

Before closing these few introductory remarks I wish to emphasize some points which I have long thought of some interest to us all. In spite of the gradually accumulating knowledge of tropical subjects which has already made the early years of this century memorable in the general history of medicine, we are still suffering from profound ignorance of many details connected with every exotic disease, and we have not yet reached the stage when any worker can dare to rest upon his oars.

Our knowledge of the prevention and treatment of an ailment has sometimes outstripped our acquaintance with the pathology and morbid anatomy of that disease, and science is in need of a devoted band of pathologists who will in time reveal to us many secrets now hidden. The foundation stone of accurate medical knowledge lies in the *post-mortem* room, and yet I am aware that diseases have often to be studied far from well-equipped hospitals and laboratories, amidst a population which will not permit the performance of autopsies. Let us hope that some day every tropical school will proudly own a large pathological museum, which will enable students to study the morbid processes of every exotic disease.

Lastly, one word of perhaps unneeded caution to enthusiastic discoverers of a new theory. If the peculiar combination of circumstances found to coexist in one country will not stand the test of confirmation in other countries where the special disease is rife, the theory must be reconsidered before being accepted as a fact. We shall all do well to remember Pasteur's advice—to take care lest we certainly find the proof for which we are searching.

DISCUSSION ON HUMAN TRYPANOSOMIASIS.

OPENING PAPER.

By Colonel Sir DAVID BRUCE, C.B., F.R.S.

THE last discussion on sleeping sickness by this Section of the British Medical Association took place in 1904, when I had the honour of opening it. At that time I laid down a series of propositions, and said it would be interesting to find out in the future how many of them would hold good.

I will run rapidly over these six-year-old propositions.

1. The first was that the trypanosomes found in the blood of natives on the West Coast of Africa and in Uganda are identical. This still holds good.

2. The second was that the so-called trypanosoma fever of West Africa is the first stage of sleeping sickness. This has also held good.

3. The third was that neither the native nor the European is immune to this disease. This, again, has held good up to the present year.

4. The fourth was that, as regards prognosis, instead of being favourable, as had been stated, the mortality was 100 per cent. This is a controversial point, but, in my opinion, there is no absolute proof up to the present that a single person has recovered from sleeping sickness.

Since 1908 there have been records of some 49 cases of sleeping sickness in Europeans. In Europeans the chance of recovery by treatment is much greater than in the case of natives. The disease in white people is usually recognized in the earliest stages, whereas in the native it is often overlooked until the symptoms of the disease are marked. In regard to the natives, the reports from the various sleeping-sickness camps show that they all tend to die off, as time goes on, in spite of any treatment. But in regard to Europeans, it may be well to go a little more into detail. Of the 49 cases, 9 are still alive, 28 are dead, and the records of the remaining 12 are wanting or deficient.

5. Another proposition laid down by me in 1904 was that there was no evidence to show that any of the lower animals took any important part in the spread of sleeping sickness. This, so far as direct evidence goes, is still true. But it is possible that some modification will require to be made in regard to this opinion in the future. On the lake shore, near the Sleeping Sickness Commission's laboratory at Mpumu, in Uganda, the tsetse flies have been found to retain their infectivity for some two years after the native population have been removed from the sleeping-sickness area. It is difficult to understand how these flies retain their infectivity for such a long time. It may be that the flies live for more than two years, and that they are able to retain their infectivity as long as they live. Or it might be that some of the natives creep back to the lake shore, and in this way infect the flies. Or, thirdly, it may be that some of the wild animals or birds on the lake shore are acting as a reservoir of the virus, and so keep up the infectivity of the flies. It is true that we kept flies infective in the laboratory for some seventy-five days, and it is probable that flies may live much longer than this in their native haunts. It is also probable that a fly retains its infectivity as long as it lives. In regard to the fly being able to obtain the virus from infected natives, that was also to some extent possible, as natives during that time were passing to and fro between the islands and the mainland to attend a local market. Against this there is the fact that the tsetse flies on the island of Damba were found to be infective as late as May of the present year, and, so far as I am aware, this island has been uninhabited for a long time. As to the possibility that some of the wild animals on the lake shore may have become infected, and so are acting as a reservoir of the virus, it is quite an easy matter to infect cattle with *Trypanosoma gambiense*, to infect flies from them, and pass on the disease by means of these flies to healthy animals. It has also been proved by direct experiment that the antelope, such as the water-buck and bush-buck, are just as capable as the cattle of being infected with sleeping sickness. In several experiments infected flies have been fed on antelope; in ten days or so, when the parasites appeared in their blood, laboratory-bred flies have been fed upon them, and finally, after some thirty days, these laboratory-bred flies have been fed on monkeys, and the monkeys have in their turn become infected. In other words, repeating as nearly as possible what takes place in Nature. In one case a naturally-infected ox was found on one of the islands in the lake. However, the result of the injection of the blood of hippopotami, antelope, crocodiles, and birds shot in the sleeping-sickness area has up to the present proved negative. We must therefore wait, and make further experiments, before we are able to answer the question as to whether the lower animals take any part in the spread of sleeping sickness. But the opinion is growing in my mind that it is more than probable that the wild game on the lake shore will be found to act as a reservoir. In this case the fly-area may remain infective for an indefinite period, and the return of the native population may require to be postponed for a longer time than was at first anticipated. Other methods of stamping out the disease may require to be experimented with. Among these the gradual bringing of the lake shore under cultivation might be feasible. Wild game, tsetse flies and sleeping sickness are not compatible with civilization and cultivation.

6. A sixth proposition was that sleeping sickness is conveyed from the sick to the healthy by means of a biting fly—the *Glossina palpalis*. During the last six years this has been proved up to the hilt. In every part where sleeping sickness is found there also is found the *Glossina palpalis*. Lately, however, there has been a revival of the disposition to believe that sleeping sickness may be spread by other species of tsetse flies, such as *morsitans* and *pallidipes*. In North East Rhodesia cases of the disease have occurred in the valley of the Luangwa, which are supposed to have been contracted there, although up to the present *Glossina palpalis* has never been found in that valley. The tsetse fly found in this valley is *Glossina morsitans*, and the suspicion is that this fly is responsible for these cases. Until, however, this has been thoroughly investigated we must cling to the belief that in Nature *Glossina palpalis* is the only carrier. Otherwise the present plan of preventing and stamping out sleeping sickness by removing the natives from the *Glossina palpalis* area would have doubt and suspicion thrown upon it, and administrative authorities would be less keen to act.

7. A seventh proposition was, that it had been proved by laboratory experiment that other members of the genus *Glossina* were able to convey the virus from the sick to healthy, and that if this proved to be true under natural conditions, there was a real danger that sleeping sickness might spread to the East Coast fly belt. Up to the present, with the exception of the Luangwa valley in North-East Rhodesia, no evidence has been brought forward to show that sleeping sickness is ever spread except by means of *Glossina palpalis*. We must therefore watch carefully for any indication of the spread of this disease beyond the *Glossina palpalis* area, and try to anticipate and prevent the invasion of the east and south.

8. An eighth proposition was, that there is no proof that other genera of biting flies, such as *Stomoxys*, *Tabanus*, etc., carry the infection under natural conditions. This also holds true at the present moment.

9. A ninth proposition was that there is no proof that *Trypanosoma gambiense* passes through any metamorphosis in *Glossina palpalis*, but that the transference of the parasite by this fly from one animal to another is purely mechanical. In regard to this point a good deal of evidence has been brought forward since our last meeting. At the end of 1908 Dr. Kleine, in German East Africa, discovered that *Glossina palpalis* could convey trypanosome disease some twenty days after having bitten an infected animal. The Sleeping Sickness Commission carried out a large number of experiments in 1909 to throw light on this subject. The result we came to was that *Trypanosoma gambiense* multiplies in the intestine of about one in twenty flies (*Glossina palpalis*) which have been fed on an infected animal; that the flies become infected, on an average, thirty-four days after their first feed upon the infected animal; and that when the flies become infected they may remain infective for as long as seventy-five days. Seventy-five days was the longest time we were able to keep an infected fly alive in the laboratory. The Commission then made a number of experiments to find out whether in fact any mechanical transference of

any kind ever takes place. From these experiments it was found that mechanical transference takes place if the flies are transferred instantaneously from the infected to the healthy animal. This is known as interrupted feeding. It was further found that no mechanical transference takes place even if only half an hour is allowed to elapse between the feeding of the flies on the infected animal and their transference to the healthy one. All our old experiments in regard to the mechanical transference of sleeping sickness up to forty-eight hours were, therefore, interpreted wrongly. They depended for their success upon the fact that they were carried on sufficiently long to enable the late development of the parasites to take place in the interior of the fly. At the same time, it must be borne in mind that there is still no evidence up to the present of any sexual cycle or metamorphosis taking place in the fly. All we can say is that after a certain time a development takes place in a small percentage of flies which renders these infective, and that the flies retain this power of infectivity for a long time. I said in 1904 that in all probability some development does take place, but I had no hesitation in asserting that this development would be found to be quite different from the metamorphosis which had been prophesied, and which we know takes place in the case of the malarial parasite and the mosquito. The discovery of a sexual cycle of development in the tsetse fly, therefore, still remains a desideratum.

10. The tenth proposition was that all the evidence went to show that all the stages of the development of *Trypanosoma gambiense* take place in the human host. At the present time there does not seem to be much meaning in this proposition, and it may therefore be passed over.

11. The last proposition gave the various proposed means for combating the disease. These were to prevent, as far as possible, the movement of healthy natives into sleeping sickness areas; the evacuation, if possible, of these areas; the destruction of the breeding places of the tsetse fly, and of the fly itself as far as possible. Of these four preventive measures, the second—the removal of the native population from the sleeping sickness area—has been the most successful. During the last two years in Uganda proper, under the direction of Dr. A. D. P. Hodges, the principal medical officer, all the natives have been taken from the lake shore and from the islands and placed in fly-free areas away from the lake shore. This, so far as I am aware, has been successful, and it is probable that, as the result of this exodus, not a single case of fresh infection is occurring in Uganda. It is comparatively easy in Uganda to carry out this method of stamping out the disease. The fly area is confined to the islands and to the edge of the lake, and does not run up the river valleys into the interior of the country except in the case of the river Nile. The natives, moreover, as a rule are docile and obedient to their chiefs. The pity of it is that the fertile islands and lake shore have gone back to the jungle, and things rank and unprofitable possess them. The destruction of the breeding places of the fly has only been possible in restricted areas—such as round the Government cantonment of Entebbe and the various landing places and ferries on the lake shore and the Nile. As long as the islands were inhabited there was necessarily a good deal of intercourse between the natives of the islands and those of the mainland. Now that the islands are empty of their inhabitants this no longer occurs, and the cleared landing places will now revert to the jungle, like the rest of the lake shore. This destruction of the breeding places of the fly by clearing the edge of the lake and bringing it under cultivation has been quite successful so far as I am aware, and has, for example, rendered Entebbe a safe and habitable place.

I have now run rapidly through the eleven propositions laid down in 1904, and, as you have heard, although most of them remain true, some of them require to be profoundly modified.

DISCUSSION.

Dr. ANDREW BALFOUR (Khartoum) said that possibly the *Trypanosoma gambiense* changed morphologically when passed through a series of domestic animals, and also in wild animals, such as antelope. There might be resting forms present in the internal organs of such animals when no parasites were visible in the peripheral blood. The difficulty of finding trypanosomes in the peripheral blood of animals was shown by recent work in America. Just as in spirochaetosis there might be what are called infective granules, so these might occur in trypanosomiasis.

Dr. J. HOWARD COOK (Uganda) said that his own experience of the mortality of sleeping sickness amongst the natives confirmed the belief that it was cent. per cent. The only hopeful case ever in the speaker's hospital was the following. Two native printers came from Entebbe, and trypanosomes were found in the glands of the neck in each case. One refused treatment and died eighteen months later, the other consented and had the usual atoxyl injections, and over four years afterwards he was alive and well, and was taken back to his employment as printer in the Government printing office. His glands were subsequently examined again with a negative result. The case was put forward not as a definite cure but as worthy of note. He also pointed out that although it might be considered that in any area or island the native population had been deported, yet it was extremely difficult to make sure that natives did not surreptitiously return to their homes in canoes by night. He and his colleagues had heard from time to time of this occurring in spite of the present stringent precautions. Such persons readily act as reservoirs of infection. In conclusion he said (1) Sir David Bruce had suggested cultivation of the lake shore. This, as an ideal, was indubitably desirable, but was it possible, and was it justifiable from the point of view of risk to employees? (2) What were the prospects and the amount of risk of clearing limited gardens by the "fly-paper" method where natives were provided with jackets smeared with poisoned treacle? (3) Was there any information as to the value of arsenic or any other drugs as a preventive of trypanosomiasis?

Dr. G. C. LOW (London) said that some time ago he read in the *Bulletin of the Sleeping Sickness Bureau* about the cases of sleeping sickness that had recently been cropping up in Rhodesia, where *Glossina palpalis* was said not to exist, but where *Glossina morsitans* abounds. The explanation of this might be due to one of four things: (1) Perhaps *Glossina palpalis* did really exist there and might eventually be found. (2) *Glossina morsitans* might be acting as the carrier of the *Trypanosoma gambiense*. (3) The trypanosome of Rhodesia might be a new species with *Glossina morsitans* as its carrier. (4) Or were these Rhodesia trypanosomes really *T. brucei*, the parasite of nagana? As regards the latter suggestion he had often thought it strange that man should be the only animal who was immune to the *T. brucei*, and perhaps after all time would show that he was not. The recent multiplication of species, chiefly by Laveran, had confused the subject very much, and it was possible that *T. gambiense*, *T. brucei*, and other species might after all be demonstrated to be much more closely connected to each other than was thought, and Dr. Balfour's remarks on the change of morphology of the *T. gambiense* in antelopes and other animals supported this. Of course many of the animal trypanosomes of the dimorphon type were morphologically different from the human, but these with the free flagellum certainly were morphologically very like each other. As regards the question of cure of sleeping sickness, the speaker was inclined to agree with Sir David Bruce that this was exceedingly doubtful. Personally, he knew many of the cases referred to, and, of course, the patient whose disease was diagnosed in 1900, and who was still alive, certainly looked like a cure. If one patient was cured then others might be; but still, even granting that, the prognosis was gloomy. Seven years after infection few would be found to be surviving. Again, one must certainly include in the statistics cases that died of intercurrent diseases, such as pneumonia, sepsis, and the like, and if this were done then the mortality rose at once enormously. With such a deadly disease, then, the only thing to do was to avoid getting it—that is, to devise a proper prophylaxis.

Dr. W. T. PROUT, C.M.G. (Liverpool), recalled an investigation many years ago into the prevalence of sleeping sickness on the West Coast of Africa. It was found that though cases occurred occasionally in Sierra Leone, the disease was not recognized by the natives, and it

was clearly not a disease of the locality. Within recent years its presence had been microscopically demonstrated, although in many cases it did not apparently reach the sleeping stage. Possibly the disease had been introduced owing to improved methods of communication along the coast. The *Glossina palpalis* was present, and possibly an extensive spread might take place. The problem would be a serious one, because it would be impossible to deal with an important seaport like Freetown by removal of the inhabitants, as had been done in Uganda. Possibly a considerable degree of saturation of a locality with *Glossina* was necessary before an epidemic spread of sleeping sickness took place, just as in the case of yellow fever and *Stegomyia*.

Dr. Louis W. Sambon (London) said that ever since 1903 he had contended in favour of the existence of a necessary developmental cycle of *Trypanosoma gambiense* within the body of its tsetse-fly carrier. This belief was founded on morphological differentiation of *Trypanosoma gambiense* observed in the blood of an old-standing case of sleeping sickness examined by him at the London School of Tropical Medicine. The differentiation was of a kind analogous to that presented by the gametes of the Plasmodidae and other haemoprotozoa. The latter had been regarded as sexuals. Another foundation for his opinion was the frequent failure reported by various investigators to infect animals by means of living and active trypanosomes taken from the stomach of the fly. This corresponded exactly with the non-infectivity of the gametes of Plasmodidae. Sir David Bruce's experiments in Zululand on *Trypanosoma brucei* had been limited to the use of flies which had only recently imbibed the blood of infected animals; the speaker had suggested that the flies should be tested fifteen or more days after experimental infection. The difference between the multiplication and development of the Trypanosomidae and Plasmodidae within their respective carriers was not really so great as appeared at first sight. The process was practically the same: A rapid multiplication following upon conjugation of differentiated forms, and an active migration through the definitive host, with periods of quiescency in adaptation to the various requirements at different stages of development. In the Plasmodidae the multiplying zygote was enclosed within a cyst; in the Trypanosomidae it remained free, and the dividing forms separated and divided again and again until the analogous minimal forms or "sporozoites" were reached. This was the only difference, and one of very little moment. Indeed, in another group, that of the Haemoproteidae, a kind of link was found between the two modes just mentioned. As had been shown by Schaudinn's researches, the zygote in Haemoproteus did not break up until the ultimate divisional forms were formed, although the multiplying zygote remained free. With regard to the possibility of hereditary transmission of *Trypanosoma gambiense*, *Trypanosoma brucei*, and probably other forms by the respective infected *Glossinae* to their progeny, the majority of experiments so far carried out to test this point had been negative, but, notwithstanding the failure of these experiments, the speaker still maintained his view, which was based chiefly on the following facts: (1) His own interpretation of experiments made by others with experimentally trypanosome-infected flies to prove their infectivity; (2) the peculiar manner in which tsetse flies produce their young, as first pointed out by Sir David Bruce; (3) the analogy, not only of certain tick-borne haemoprotozoal infections, but of fly-borne trypanosomid diseases, as shown by Flu in the flagellate of *Melophagus ovinus*, and by Schaudinn in the flagellate of *Culex*.

SOME FEATURES OF TUBERCULOSIS IN INDIA.

By Lieutenant-Colonel J. R. Roberts, M.B., M.S., F.R.C.S.Eng.,
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The object of this paper is to show that tuberculosis manifests itself in India rather differently to that in Europe, not at all in the tuberculous lesions of organs but in the beginning of the disease, and that it adds another prolonged fever to the many fevers met with in that continent; we have enough of these, and very puzzling they often prove in their differentiation, when it comes to a question of diagnosis. The ophthalmic and cutaneous reactions with tuberculin have added a valuable method to assist us in the differential diagnosis. There are three forms in which early tuberculosis shows itself, and they differ, curiously enough, and for some unexplainable reason, from the early signs seen in Europe.

1. An acute febrile form resembling atypical typhoid, which I would call "acute tuberculous fever," and met with principally in young adults.

2. An irregular fever with enlargement of the cervical glands, the carotid chain, and those under the jaw, and seen principally among children.

3. A debility associated with dyspepsia and constipation, resembling tropical debility. Even here the thermometer shows afternoon or evening rises to about 100° F., and very easily overlooked.

An enumeration of the symptoms of acute tuberculous fever will show you how easy it is to confound it with other Indian fevers. There is a continued pyrexia of a remittent or intermittent type, lasting from a week to four weeks or more, and I have known cases with a duration of two, three, and four months. The liver is often enlarged, the spleen not so; the bowels are constipated, generally obstinately. The abdomen shows some amount of meteorism, though this never reaches the extent seen in enteric fever. Vomiting and nausea may be marked, though not continuous. The most distinguishing feature of this fever is pain and tenderness in the epigastrium, and it is on this that special stress must be laid, in order to assist us in the differential diagnosis. Some cases have acute exacerbations of pain, others only tenderness, which, if it be associated with hepatic enlargement, makes the diagnosis from liver abscess very difficult. The mind is clear, generally remarkably so, except that when the temperature is high there may be some delirium at night. The paroxysms of pyrexia produce none of the marked prostration noticeable in malaria, enteric, etc. The initial enlargement of the spleen in enteric contrasts with the want of enlargement in acute tuberculous fever. The tongue is furred, but its condition does not remind one of the "typhoid tongue." The skin is dry and hot; there are no hectic or malarial sweats. The urine is high-coloured and contains no albumen. Such, then, is this acute fever, and it is easy to imagine that many of these cases have been called "atypical typhoid," or simple continued fever. It is not a picture of the acute miliary tuberculosis, or the "typhoidal type" seen in Europe and here so fatal. In India our patients almost invariably recover. However, I maintain that in many cases it means the launching out of the sufferer on a tuberculous career. Thus, it may be the beginning of a long period of ill health of an indefinite kind—dyspepsia of a flatulent type, relapses of fever, periods of general depression, with a temperature below normal if frequently and carefully taken, and a loss in weight, and in some cases anaemia. The general malaise is not continuous; the condition is varied by periods of good health.

As there are numerous cases of this fever among Europeans in India, as well as among Indians, it is obvious that some of the former drift to England to puzzle consultants at home. Ill-defined cases with a history of an acute fever or irregular fever, often called malaria, associated with some liver enlargement, should, I think, be investigated for Indian tubercle when other diagnosis has failed.

Europeans appear to be more resistant to the after-effects of tuberculous fever, probably owing to the healthier lives they lead, and there may also exist a certain racial immunity; but among Indians numbers develop obvious tuberculosis—tubercle of the lungs, glands, bones, etc., following immediately on the fever, or after an interval of health. The longer the fever lasts the greater the danger of these sequelae. In many cases the initial fever has been forgotten, or called malaria; and especially when irregular exacerbations of fever follow, the resemblance to malaria is still more striking.

The existence of the abdominal symptoms mentioned above points to invasion by means of the alimentary canal, and whether it will be proved to be a form of bovine tuberculosis is a question yet to be settled. It has, how-

ever, nothing to do with tuberculous peritonitis; there is little in common, though I have seen the peritoneum eventually invaded, nor is it a form of acute generalized tuberculosis, or the typhoidal type described by Professor Cornet. The low mortality is enough to disassociate it from these.

The differential diagnosis of this disease from among the acute and continuous fevers in India does not, I think, present any difficulty. With cases of continued fever it has now become the routine of Indian practice to examine blood slides for malarial parasites; to try Widal's test for typhoid, paratyphoid, and Malta fever; to make a blood count for leucocytosis in hepatic cases; and when obviously the case is not one of septicaemia, it is then time to try the cutaneous reaction for tubercle, and, failing that, the ophthalmic reaction; and if these fail, then it is time to relegate the cause to the unknown. However, in practice, a number of acute tuberculous fever cases will be met with. An interesting point is that the opsonic index to tubercle is high—certainly during the early part of the attack. It is only when by watching this and noticing a fall in the index that treatment by tuberculin is to be decided on. Then it is very efficacious, and then only; and, moreover, it is of extreme value in warding off the tuberculosis cachexia that follows and in preventing the appearance of localized tuberculosis. Thus I have been in the practice of using T.R. injections for some months after the apparent cure.

Concerning the second form of early tubercle I have mentioned above as principally occurring in the young, my remarks are, perhaps, of less interest. So widespread has tubercle become in India that the number of children affected by this irregular fever and enlarged glands is a matter of some importance. The liability to fever in these cases is the feature that contrasts them with similar gland enlargements due to tubercle in Europe. I am only referring to early cases, not those in which numerous cervical glands, with or without enlargements in other groups, are manifestations of obvious and widespread tuberculosis. The liability of the former class to become merged with the latter is also noticeable. I have seen numerous cases of irregular fever, enlarged cervical glands, even among the young of the best families in India; the conditions that bring about this are a misfortune. However, if these boys and girls are placed in healthy surroundings, Nature will effect a cure. Tuberculin is useful here in hastening matters. In cases among English children I have always given a good prognosis and advocated a hasty retreat to Europe or the hills.

The third class of early tuberculosis, in which the symptoms are more indefinite and the patients simply complain of ill health, would be more difficult to prove as due to tubercle were it not that numbers drift into definite phthisis. It is as well to be on the look-out for such cases, and in these the thermometer gives us its ready help. There is a daily rise to about 100° F., or a little under, and this explains symptoms such as headache, cardiac irritability, dyspepsia, and general neurasthenia. There, again, the cutaneous and ophthalmic reactions are useful tests. If the positive reaction is association with such symptoms, then that clinches the diagnosis. I am quite aware that this reaction can be obtained in a proportion of healthy people, but the patient is not one of these. Again, in the tropics it is no uncommon thing to find that many individuals show a rise of temperature on either side of 99°, and are still healthy, but our tuberculous cachectics give a rise and fall, which latter is particularly characteristic. As this class of case is cured by a change to a better climate, it is easy to overlook these, and to classify them as neurasthenics suffering from tropical debility.

FURTHER OBSERVATIONS ON LEISHMANIA TROPICA OF ORIENTAL SORE OF CAMBAY, INDIA.

By R. Row, M.D.Lond., D.Sc.Lond.

SINCE the publication of my last memoirs on the development of this parasite in culture in human blood serum, a number of observations have been made by me to elucidate the following points:

1. On the changes the flagellate body undergoes in cultures *in vitro*.
2. Whether the ⊙ body could be recovered as the result of further changes in the flagellates in culture *in vitro*.
3. On the production of the lesion in monkeys from the human virus.
4. On the differences of this lesion from that produced in monkeys by Nicolle in Tunis.
5. On the nature of the parasites recovered from the artificial lesions in monkeys.
6. On the possibility of the house-fly being one of the etiological factors concerned in the natural production of the disease, in the light of the experiments on monkeys.
7. On the practical application in the treatment of kala-azar by using the virus from the monkey for vaccination of kala-azar patients.

The following is a summary of my observations on the above-mentioned points:

1 and 2. No definite ⊙ bodies can be observed even after twenty-four days' observation of the hanging-drop cultures made with aseptic precautions; the only change observable (after the appearance of the flagellates) consists of the appearance of a number of masses of large coccal bodies in the disintegrating groups of flagellates. These look like contaminations, but on close examination appear like modified ⊙ bodies, looking like large torulae—about one-third of a red corpuscle—with a central deep violet staining core and a faintly staining pink ectoplasm. In no case, however, can the nucleus and blepharoplast be made out with certainty. These bodies in culture have never given rise to flagellates, and by inoculation experiments they have always yielded negative results. Thus it would appear that, even should these bodies turn out to be the ultimate post-flagellate product of the parasite, they require to undergo certain other changes before they can behave like the original ⊙ bodies of the parasite—or look like them; and in all my cultures I have never been able to observe even any attempts at "rounding off" of the flagellates such as are described and depicted by Nicolle.[1] These facts, in addition to those described below, lead one to the belief that the Tunisian parasite is distinct from the Indian species with which I have been working.

3, 4, and 5. Production of the disease in the *Macacus sinicus;* the incubation period; the character and duration of the sore; points of difference from the artificial sore produced by Nicolle in Tunis.

The contents of a sore from the human lesion taken on December 30th, 1909, were used to infect a monkey (*M. sinicus*) by cutaneous scarification on December 31st. After three or four days the scarification wound healed up, and at the seat of infection not a trace of anything having been done could be detected for two months. It was on March 1st, 1910, that three very minute spots, almost like pin-points, could be seen in a line 2 or 3 mm. apart. These could not be felt, but only seen as slight brownish patches of discoloration. They were watched day after day, and found to be growing very slowly, and on March 16th they could be distinctly felt as tiny nodules or small pin-heads. There was a faintly marked tendency to scale formation, but no red zone round the pin-heads. On this day one of them was cut into, and the sero-sanguineous fluid, when examined, was found to be rich in the parasite, both individually and packed in large macrophages. The parasite appeared larger than that of the human lesion and the details appeared clearer, so that I am led to believe the parasite had undergone the first stage of development even *in situ* in the lesion of the monkey.

A portion of the juice was cultured as in my previous experiments, and beautiful masses of flagellates and developmental stages of the parasite were obtained; the flagellates were utilized for infecting a monkey—to test if the flagellates retained the virulence of the original ⊙ bodies—with negative results up till to-day; and lastly, a third part of the juice was utilized to infect fresh monkeys by cutaneous scarification, with positive result confirming the results of first experiment. The lesion in the monkey is slow in development and practically the same as in man before its ulceration. There is always a delicate layer of scales on the sore, and during these three months the sore has been gradually increasing in size in all dimensions; the three papules having now fused, the sore is of the size of a small thin half-bean. There is no suppuration, and each time it has been examined it has been rich in the parasites—both as regards individuals and also in parasite-

laden macrophages, and each time it has yielded good culture and abundant rosettes.

Thus it appears that the sore I have produced in monkeys is distinct from that produced by Nicolle in Tunis in monkeys with the parasite of Clou de Gafsa, and for the following reasons:

(*a*) Incubation in my case in 2 months; incubation in Nicolle's case in 3 to 4 weeks (24 days).

(*b*) Lesion in my case is slow in development and of long duration; lesion in Nicolle's case is quick in development and of 2 weeks' duration.

(*c*) Parasites obtained from my sores are rich and well-developed; parasites obtained from Nicolle's sores are very few and shrunken and abortive.

(*d*) The macrophagin in my sores are large, abundant and packed with parasites; the macrophagin of Nicolle's sores are small and at best contain 4 or 5 parasites, and those, too, in shrunken condition.

(*e*) My sores have been still growing (3 months); Nicolle's sores healed in 15 days.

(*f*) And lastly: the animal is susceptible for reinfection during the period when the first sore has been in progress, as I have been able to infect another spot in my first infected monkey one month after the appearance of the first sore. This fact is exactly what takes place in man, as during the course of one attack a person may develop more than one sore—appearing periodically until he may have even as many as twenty sores in the different parts of the body.

6. From the above facts, derived from the experimental inoculation in the monkey, one may be justified in concluding that to obtain a sore it is a *sine quâ non* to infect a spot with parasite in the ⊙ body state, and that any development from this towards the flagellate stage reduces the potency of the virus, and that one person may reinfect himself or another person directly—that is, without there being the necessity of the intervention of an insect in whom further development of the parasite of any complicated nature has to take place, and that it is much less likely that the intervention of a biting insect is required for the production of the disease. The parasite has been never found by me in the peripheral blood of over 40 cases examined for the purpose. And the fact that occasionally a parasite has been found in circulating blood by another observer (Neumann) is more of interest than of importance in the consideration of the etiology of the disease.

It may be stated in this connexion that the disease in Cambay is most prevalent towards the end of the rainy season, and taking two months as the incubation period in man, the persons get infected mostly during the height of the monsoon, when the house-fly is the greatest pest in Cambay. The discharge from the sores forms a great attraction to the common house fly, so that it is not unusual to see a patient with a sore literally besieged with swarms of flies; and taken that the discharge of a sore is rich in parasites, and the fly settles on it and before long settles on another person, it is not unlikely that the parasite could be transferred directly from person to person, either on its legs or much more so through its excreta, and an accidental nail scratch produced during the tickling by the fly on the spot would be all that is necessary for the infection.

Experiments conducted to reproduce these conditions are in progress, and the results are being awaited with interest, and will be communicated directly they are received.

This must not be taken to be the only method of infection—but it seems to be one of the simple methods—explicable in the light of experiments on the monkey and the local conditions of Cambay above indicated, and should not lead one to forget the possibility of the important rôle played by the house-fly, in whose intestine the ⊙ body may go through the whole cycle of development into flagellates and back again into the ⊙ body.

These observations are also in progress, and will be forthwith communicated as soon as the results are available.

7. Manson's questions at the end of his chapter on kala-azar are so suggestive that I have taken the first opportunity of attempting to answer them with the aid of vaccination in man. Through the kindness of Major Donovan I have been able to vaccinate two cases of kala-azar under his care in Madras, in the right forearm—with the virus of the monkey—on April 28th, 1910, and Major Donovan has been kind enough to keep these cases under his observation, and we shall communicate the results at our first opportunity.

REFERENCE.

[1] *Archives de l'Institut Pasteur du Tunis*, 1909, p. 120.

OBSERVATIONS ON "TROPICAL BRONCHO-OÏDIOSIS."

By ALDO CASTELLANI, M.D.,

Director, Clinique for Tropical Diseases, Colombo.

AT the meeting of the Far Eastern Association, held at Manila in March last, I communicated the results of an investigation on a type of bronchitis—very common in Ceylon—due to an *oïdium*. At that time I had observed about 20 cases, the diagnosis being based on the microscopical examination of the expectoration. In 4 cases I had grown the fungus, using maltose and other sugar agars. Since my return to Ceylon I have come across several other cases, and I have grown the fungus in two more. It may be, perhaps, of interest to give the result of my further researches.

A mild and a severe type of the condition may be distinguished. In the mild type the general condition of the patient is fairly good, there is little or no fever, and he simply complains of cough; there is muco-purulent expectoration. The physical examination of the chest will reveal a few coarse moist râles, or, in some cases, nothing at all. The condition may last several weeks, and even months. A potassium iodide treatment (grains xv three times daily) is of great advantage.

The following is an example of this type of the malady:

Mrs. N., a European lady, living in a very hot and damp district of Ceylon for the last four years, consulted me three weeks ago. For three months she had complained of cough with scanty muco-purulent expectoration, mostly in the morning. General condition fairly good. The examination of the chest reveals nothing. Examination of the sputum: Tubercle bacilli negative; oïdium-like fungus present in large amount, and easily grown on sugar agars. Saiodin was prescribed (grains x three times daily).

I received a letter a few days ago informing me that she is much better and the expectoration has completely stopped.

The severe type of the disease closely resembles phthisis. The patient becomes emaciated; there is hectic fever, muco-purulent and bloody expectorations; occasionally true haemoptysis occurs, a teaspoonful or more of bright blood being spat up at a time. The search for tubercle bacilli is always negative; the inoculation into animals is also negative. The physical examination of the chest shows patches of dullness, fine crepitations, and pleural rubbing. This type is often fatal, no treatment being of much use.

As an example of the severe type of the condition, the following case may be quoted:

Mr. M., planter. When the patient arrived in Colombo, after several months' illness, he was extremely weak, had serotine fever, bloody expectoration. On examination of the chest, both sides several patches of diminished resonance, fine crepitations, and pleural rubbings. I examined the sputum for tubercle bacilli many times without finding any. Inoculations in several guinea-pigs negative. Cutaneous and ocular reactions negative; cultivations were made from the expectoration on several occasions. Oïdium-like fungus and a streptococcus were constantly grown.

No treatment relieved the patient, who died six weeks after arrival in Colombo. No autopsy was allowed.

Cases of medium gravity are also met with. These often present, with bronchial and broncho-alveolar symptoms, a type of subcontinuous or continuous fever. As an example of this type of the malady I may quote the following case, which I have kept under observation in the seamen's ward for some time.

Singho Appu, Cingalese man, 29 years of age, admitted to the seamen's ward on March 31st, 1910, with history of continuous fever and cough, said to be of two weeks' duration. On admission the general condition of the patient is fairly good. Temperature 101°, pulse 96. The patient has frequent attacks of cough, but the expectoration, which is muco-purulent, is not abundant. The physical examination of the chest reveals a few rhonchi and some coarse moist râles on both sides; at the right base there is a small patch where the resonance is slightly impaired, and some subcrepitant râles are heard; a similar small patch, with the same signs, is found in the left infrascapular region. Nothing worth noting as regards the circulatory and digestive systems; the oral mucosa does not show signs of thrush.

Special Examinations.—Sputum: examination for tubercle bacilli, repeated several times, negative. The microscopical examination of the fresh preparations shows a large amount of a fungus, numerous spores and some mycelium being present. The fungus (see Table, Strain 6) is easily grown, using maltose

	Litmus Milk.	Glucose.	Laevulose.	Maltose.	Galactose.	Saccharose.	Lactose.	Mannite.	Dulcite.	Dextrin.	Raffinose.	Arabinose.	Adonite.	Inulin.	Nutrose.	Broth.	Peptone Water.	Indole.	Liquefaction Gelatine.	Liquefaction Serum.	Gram.
Oïdium, Strain 1	O	AG	AG	AG	AG	AG	O	O	O	O	O	O	O	O	O	O	O	O	O	O	+
,, ,, 2	O	AG	AG	AG	AG[3]	AG	O	O	O	O	O	O	O	O	O	O	O	O	O	O	+
,, ,, 3	O	AG	AG	AG	AG[3]	AG	O	O	O	O	O	O	O	O	O	O	O	O	O	O	+
,, ,, 4	O[4]	AG	AG	AG	AG[3]	AG	O	O	O	O	O	O	O	O	O	O	O	O	O	O	+
,, ,, 5	O[4]	AG	AG	AG	AG[3]	AG	O	O	O	O	O	O	O	O	O	O	O	O	O	O	+
,, ,, 6	O	AG	AG	AG	AG[3]	AG	O	O	O	O	O	O	O	O	O	O	O	O	O	O	+

A.—Production of acid. G.—Production of gas.
O.—Negative result; namely, neither acid nor clot in milk, neither acid nor gas in sugar media, or non-liquefaction of gelatine or serum, as the case may be.

1. Clear. Thin pellicle.
2. Practically no growth
3. Trace only.
4. If any change, slightly alkaline.

and other sugar agars. A few cocci and short bacilli are present; true pneumococci apparently absent.

Blood.—Widal and bile-blood cultures negative; sporo-agglutination for the fungus positive.

The temperature gradually decreased to normal. There were no sweatings or shivering fits. The condition of the respiratory organs gradually improved, the patches of diminished resonance becoming normal. The expectoration, which had never been very abundant, decreased rapidly, and the fungus disappeared.

In fresh preparations of the sputum spore-like, round or oval cells, 4 to 6 μ, are seen at portions of mycelial tubes. The fungus is Gram-positive. If a particle of the sputum be smeared on maltose or glucose agar plates, after two or three days numerous white, roundish colonies appear, easily distinguished, even macroscopically with a little practice, from the colonies of cocci, etc.

The fungus colonies are further investigated by inoculating various sugar agars and sugar broths. On solid media the six strains I have isolated are identical; their growth is comparatively scarce on ordinary alkaline agar, while it is very abundant, thick, and of white creamy colour in the various acid sugar agars. The best (?) media are perhaps Sabouraud and glucose acid agars. On these media the growth on the slope consists practically of globular cells, similar to a yeast, while in the water of condensation globular cells and mycelial particles are generally present together. A little mycelium may, however, occasionally be found also in the growth on the slope.

The principal culture characters of the six strains of oïdium I have isolated are collected in the accompanying table.

From the table it will be seen that all the six strains are practically identical, except that some produce acid and abundant gas in glucose, while others produce in that medium acid, but only a trace or no gas at all. The strains are different from the common *Oïdium albicans* (the thrush fungus) and *Oïdium lactis;* in contrast to these among other different characters they have no action on milk (thirty days).

Conclusions.

1. A type of bronchitis in which an oïdium is present in the expectoration is of common occurrence in Ceylon.

2. The fungus is probably the true cause of the disease, as in my cases no other etiological agent, such as tuberculous bacilli, etc., could be found. Moreover, when the patient gets better the fungus becomes very scarce or disappears completely.

3. The oïdium infection apparently attacks directly the bronchi, as none of my patients presented lesions due to oïdia in the mouth or pharynx.

4. The oïdium, as shown by its culture characters, seems to be a new species for which I suggest the term "*Oïdium tropicale.*" The pathological condition caused by it might be called "tropical broncho-oïdiosis."

5. The diagnosis of tropical broncho-oïdiosis is based on bacteriological methods. The condition is distinguished from pulmonary tuberculosis by the absence of the tubercle bacillus, the negative animal inoculations, and the negative result of the cuti and ocular reactions; from "broncho-spirochaetosis" by the absence of spirochaetes; from "endemic haemoptysis" by the absence of the ova of the specific worm, *Paragonimus Westermani* (Kerbert).

6. Before making a diagnosis of "broncho-oïdiosis" care should be taken to ascertain that the expectoration was collected in sterile Petri dishes, because in a tropical country sputum exposed to the air quickly becomes contaminated with various fungi. Primary broncho-oïdiosis should also be distinguished from the secondary broncho-oïdiosis occasionally met with in cachectic patients suffering from cancer, diabetes, tuberculosis, etc., and presenting thrush lesions on the oral mucosa.

In these cases the ordinary thrush fungus (*Oïdium albicans*) may occasionally spread from the oral mucosa to the respiratory organs.

DISCUSSION ON SPECIAL FACTORS INFLUENCING THE SUITABILITY OF EUROPEANS FOR LIFE IN THE TROPICS.

OPENING PAPER.

By Sir R. Havelock Charles, K.C.V.O., M.Ch., F.R.C.S.I.,
Formerly Professor of Surgery, Medical College, Calcutta, and Surgeon to the College Hospital.

The subject we have to discuss affects many: first, those wishing to try their fortunes where the sun shines brighter; secondly, those recruiting men and women to carry on work in places where risks to health are much greater than in the home countries; this applies to Government and masters of private enterprises; thirdly, assurance companies, who are asked to take risks foreign to conditions usual to them; fourthly, the inhabitants of the countries that receive those whom we send, and who are undoubtedly influenced for good or evil by the material exported, by the example set by that material—morally, physically, and hygienically. Hence, only the fit should "take up the white man's burden," and we should only "send forth the best we breed."

Let us first consider what we are to understand by the term "the tropics."

We have all been taught, at some time or other, that the tropics form the zone around the earth, extending 23½ degrees on either side of the equator, the northern limit being the Tropic of Cancer and the southern boundary the Tropic of Capricorn, the whole region being called the torrid zone. If we stop with this knowledge, we have no idea of the climatic conditions to be met with. For about 12 degrees on either side of the equator, at the sea-level, you have torrid heat. But, since the highest mountains of the world are found in these regions, every variety of climate is experienced, from the true tropical of the coast—

> A listless climate made, where, sooth to say,
> No living wight could work, nor carèd even to play,

where if the health be ill,

> The soul sours, and gradual rancour grows
> Embittered more from peevish day to day.

Between this heat and the almost arctic conditions of perpetual snow and ice, in the most elevated regions,

there is a zone, seldom thought of by the dweller in Europe—the third temperate zone. There the scenery and climate are often all that the fancy can picture. With advancing tropical hygiene these localities may possibly become partly a white man's country. The conditions of life being so varied, they can only be appreciated by those who have lived there.

We know it is in the tropics more especially that the lives of the lowest organisms are supported at the expense of the higher ones. It is there that the worst of the scourges of man are traceable to parasitic invasion. It is there that every condition requisite for the natural cultivation of pathogenic life is found. It is there that parasitic invasion is much more highly destructive to the human race than is its malign agency on our species in the temperate regions.

For a crop to grow, two things are requisite: (*a*) Seed; (*b*) soil.

Since the parasitic seed everywhere abounds in the torrid zone, the aim of the sojourner—that "stranger among strange faces"—is so to live that his body may be but bare and stony ground when the germs fall thereon.

The aim of the medical examiner should be to seek out those with the fewest flaws—those with the machinery least likely to break down under a stress greater than that for which the European was evolved.

The examiner must never forget that the man or woman he is sending out holds his or her life, in great measure, in subjection to the innate power to subdue the most apparently insignificant members of the animal and vegetable world. A knowledge of these organisms is due to the labours of workers in tropical pathology.

We seem to be near the time, owing to awakened tropical study, when Wisdom will at length be justified of her children, and research in these philanthropic studies will meet with generous endowment by those whose fortunes have been made in regions where thousands die from preventable disease. The great end of life is, as Huxley put it, not knowledge but action, or as a West End hospital has pithily emphasized it, by erecting in golden letters on its front, "help is better than sympathy."

In addition to climatic conditions are to be considered the racial surroundings, which will be influenced by the civilization or non-civilization present; the customs due to religious beliefs; and the bearing of the natives to strangers. All peoples are not equally pleasant to live with, and this often makes the amenities of life agreeable, or the reverse, according as the energy of the European is appreciated, or is obnoxious.

The dweller in the torrid zone finds the necessities of life to his hand with but little struggle; hence his philosophy is,

> Be sure it is of vanities most vain
> To toil for what you here, untoiling, may obtain,

and this reacts on him.

The European, quick, hasty, often impatient, thinks his own ways are ever the best for others, and he is continually pushing his ideas and practices where they are neither understood nor desired. It would be well if he could cultivate his activity without restlessness, his energy without impatience, and his inflexibility without ill humour; if he would follow the rule of life laid upon every man—that of discovering the mean, suited to his character, between self-assertion and self-restraint—in consonance with his environment.

Three special factors peculiar to the tropics directly bear on his characteristics: (*a*) The long-continued high temperatures; (*b*) the great diurnal variations; (*c*) the parasitic diseases.

The physiological effect of these is excessive cutaneous action, alternating with internal congestions. The ultimate results are a slow advancing asthenia and anaemia and a sapped constitution. Pathological changes now ensue—in deterioration of blood and degenerations due to hyperaemia, and to loss of action in the liver and intestines. Following on the incompetence of these viscera comes an accumulation of toxins.

The toxins, the continuous heat, and the impoverishment of the blood increase nervous irritability, and there follows a lessening of the controlling influences of the nervous system over nutrition and the mechanism of the vital functions.

The individual who is able to get satisfactory work out of his machine s said to be acclimatized, and Nature here has been able to accommodate the constitution to new physiological requirements. When successful the process will be accompanied by the acquisition of habits of thought and hygiene in keeping with the new surroundings. Certain organs will have more to do—liver, spleen, intestines, and skin. Certain have less to do, since the process elevates the activity of some and depresses that of others, but it is questionable whether perfect compensation is ever possible in the generality; and most individuals will ultimately suffer from tropical congestive diseases. The subjects of these worries are those so susceptible to sudden changes of temperature, especially cold and damp, which cause "chill"—a term much better understood by the practitioner in the tropics than his *confrère* in Europe. Another point we who have lived there have had so often impressed upon us is that once an individual has had a severe illness in the tropics, a prolonged change to Europe will be essential; whereas convalescence from a similar sort of breakdown in the temperate zone would possibly, without harm, lead to an immediate return to work.

The best kind of man to go to the tropics is the good ordinary type of Britisher, with a clear head "well screwed on," an even temper, not over intellectual; one who can take an interest in things around, not unduly introspective, not ever sighing for the flesh-pots of Piccadilly; one who can work hard and find pleasure therein, capable of bearing exposure to the sun; one who will practise temperance in all things, with self-control and common sense. He will have a mouth full of good teeth, a healthy appetite, and a good digestion; a bowel marked by regularity in action, but a tendency to constipation rather than looseness; possessing a chest with good expansion and a heart with plenty of give and take, a regular pulse and a healthy circulation; a liver and kidneys that act without drugs; and a skin clean, healthy, and not overmuch of the blonde type. Such a one will bear with honour to himself and credit to his country the white man's burden; will take an interest in life, will be an asset to his employers, and, appreciating the magnificence of his surroundings, find his work to his mind and inclination.

The best type of woman will be built on similar lines, and will be a true helpmeet to her husband. My professional observation has taught me, what all of us know, that the very best asset a working man in the tropics can possess is a true woman, and, with Chaucer, I concur and say, "What is better than wisdom? Woman. And what is better than a good woman? Nothing."

She will have her trials. Every source of annoyance to the husband will be even greater to her, for she has more leisure to think, and her chief danger is lack of occupation. But, if she interests herself in her house, and takes up and pursues some hobby to while away the time, she also will receive her reward, and find the tropics not unbearable.

The type of woman not wanted is the irritable and capricious. She who considers she is "misunderstood by her husband," given to headaches and backaches, and fits of the vapours—

> Who sometimes would laugh and sometimes would cry
> Then sudden waxed wroth, and all she knew not why—

who takes no interest in her house, or who has no pursuit to occupy her too great leisure, who must be amused and cannot amuse herself, whose sexual functions cause her to be a chronic and fault-finding invalid.

The unsuitable man is he who is a victim to migraine, headaches, any hereditary mental taint, or epilepsy; who bears heat ill, or suffers from insomnia, or is neurotic in any way. If he have irritable eyes that suffer from glare, or a high degree of myopia with fundus changes, he should be viewed with suspicion. If asthma worries him he should not go, and tuberculosis should bar him absolutely.

Since debilitating climatic influences are distinctly calculated to bring about early enfeeblement of the heart, the subject of athlete's heart must receive attention. Valvular troubles should be a bar, and arterio-sclerosis a cause of absolute exclusion.

Bad teeth, enlarged tonsils, adenoids, mastoid trouble, and any form of nasal obstruction should first be set right. A tendency to chronic dyspepsia and loose bowels, with disordered liver, leading to attacks of jaundice, must be carefully considered. A suspected appendix must first be removed. Bright's disease in all forms must exclude, and

cases of physiological albuminuria, in my opinion, should not be accepted.

Victims of diabetes, or those addicted to drugs or alcohol, present nothing for second thought. The anaemic are quite unsuitable, and those of the enteric age should first be rendered immune.

The obese individual is heavily handicapped with possibilities of fevers, and heat, and consequent heart failure. I do not think he is fit to be sent to the tropics.

Subjects of gouty eczema, psoriasis, and bad acne, and cases of furunculosis, will do ill in hot regions, and ever be subject to the worries of Job when he used his potsherd.

Those suffering from syphilis, when the disease is active, should be kept at home; but once the complaint has been got in hand, other things being equal, a case can go through its further treatment quite well—certainly in India.

Subjects of marked varicose veins and bad haemorrhoids must have them first set right. Cases of varicocele require operation when seeking Government service. This is necessary in any pensionable employment, where it is not advisable to admit men with a disease showing objective signs, upon which subjective symptoms might be based by any one who may desire to malinger, and so escape duty, or service, or obtain leave wrongfully. My personal experience advises me to refuse such candidates who suffer from any form but the very smallest enlargement. It even gets worse under conditions of tropical work.

The subject of hernia, of course, is not admissible without the radical cure being performed successfully.

A class of unfit may, and do, live at ease within the tropics. These are certain of the weak-chested and scrofulous individuals, but never those with active tubercle. Some of us can recall instances of individuals—old tropical residents—anaemic, cachectic, with organic disease present, leading a happy existence in the plains of India. Their functional energy receives force from the external warmth, and the skin, stimulated to overaction, relieves the necessities of the debilitated internal organs. These old people have the physiological pendulum so set that the clock only goes in one position, and any sudden change, such as a high degree of humidity and rapid fall of temperature, met with at the beginning of the rains or in the hills, soon find their weak spots.

In considering the factors bearing on tropical enlistment one must look at the various sides.

1. That of the employer of labour, whether Government or private enterprise. Often candidates may be passed for a four years' spell of work that could not possibly be allowed for twenty years. Again, admission to a pensionable service from the employer's point of view must be more closely guarded than employ without pension.

2. The side of the would-be emigrant. It is not kindness to him, in the long run, nor is it to his interest to be passed fit if he be a doubtful life. It is better to stop his going to a place unsuited to his organism, and he should be advised to try climes of a temperate nature.

3. The side of the assurance company. Each tropical country, and each part of it, should be treated on its own merits. Actual personal knowledge alone can afford a company advice worth having. A life might be a fair risk living in one part of India, and a bad one if sent to another part.

There is a class of European—the man on whom the tropical factors *seem* to have no influence. He follows his own free will in drink and diet, and appears none the worse. From the time of Job Charnock even until now examples are many. He is above the law, and is a sad rock of offence to his weaker-kneed fellow countrymen. They who try to imitate him get invalided or die in the attempt.

The type of returned old Indian of former days, such as Thackeray has drawn him, is not so often observed now—

> A military gent I see,
> And while his face I scan,
> I think you'll all agree with me,
> He comes from Hindustan.

He was of the period of curry and brandy-pawnee, and a survival from many.

Some of us can look back and think of old friends and comrades who started life with us years ago. Alas! how many "are not"!

> "The names we loved to hear have been carved for many a year on the tomb."

They also were selected physically fit for tropical work. But, no matter how you make the choice, certain will drop out, and it is not always those with the apparently strongest bodies and best physique that last the longest, but rather those possessed with what I may call the tropical trinity—an even temperament, a healthy digestion, a sound nervous system—and of these three the greatest is the last, because it usually implies the first two.

The problem appears to be a sum in simple proportion. You are given the three factors:

1. The European, with his special physique, habits, and temperament.
2. The hot countries, with their climates and special parasitic diseases.
3. The inhabitants and their peculiarities.

State your question, arrange your factors, work out the sum, and find the fourth proportional, which will be, according to the interaction of the factors, the probable return of the exile, should he be endowed with the stated qualifications, in a fair condition of health after twenty-five to thirty years of strenuous life; or, when the qualifications have been deficient, an obituary notice and funeral in some foreign clime—perhaps the return of an invalid, who will eke out a miserable existence at the mercy of every thermometric or barometric change in these isles.

The right man, as Bacon says, "has fortitude and constancy of mind." "He enjoys the good without disdain, and endures the bad without impatience."

DISCUSSION.

Colonel T. H. HENDLEY, I.M.S. (ret.), said he cordially agreed with all Sir Havelock Charles had said, and should like to see his remarks printed and kept in every board-room dealing with candidates for the tropics. The reference to jaundice as disqualifying was of interest to the speaker personally, as he had suffered from jaundice twice quite early in his service, and yet he had stayed some thirty-three years after these attacks in the East, and with good health. As to the question of leave, the present custom in India was that the first leave should not be longer delayed than five or six years. The speaker had thirteen years' service before he took his first leave, but he believed the present system answered well. To the observation made by the opener of the discussion that even the unhealthiest tropical provinces often contained healthy areas in contiguous hills, it might be added that even in the plains there was sometimes a great difference in the healthiness of adjacent stations.

Dr. C. F. HARFORD (London), speaking as medical officer of the Church Missionary Society and of the experience of the medical board of that society, strongly emphasized the importance of persons intended for work in the tropics possessing a thoroughly sound nervous system. The adverse nervous influences of the tropics were partly due to the heat and the effects of climatic disease, but also due to strange languages and surroundings and the many influences which made it difficult for an individual to adapt himself to his environment. As regards the digestive system, there was decided risk in sending out people who had a tendency to looseness of the bowels. It also seemed to him undesirable to send out persons with chronic middle-ear disease, as this might interfere with the taking of quinine.

Colonel C. H. JOUBERT DE LA FERTÉ, I.M.S. (ret.), remarked that the advent of bacteriology had greatly helped to mitigate the terrors of life and the difficulties of the practice of medicine and surgery in tropical climates. This "bogey," if he might venture to call it so, of the tropics had much to do with mistaken views of the causes of disease in tropical countries. Before the introduction of antiseptics it used to be thought that all operations in the tropics were fraught with danger and should only be performed in the cold weather. But after many years' experience of abdominal surgery in Calcutta he was able to assert that surgery was as safe, if not safer, and the results as good there as in temperate climates. The free ventilation of the wards, with as many large windows as beds on both sides always open to currents

of fresh air, gave ideal conditions. Possibly for about six weeks during the hottest season surgical work slacked off, but this was more due to the physical strain on the operator than to fear of bad results to the patient. It had been very truly said that "life in India depends on the liver." If those who had to live in the tropics never forgot the existence of the hosts of "lowly organisms" which surrounded them day and night, lurking unsuspected in articles of food and drink, and if they knew what to avoid and led a temperate, active life, they would find that life in the tropics had more compensations and fewer terrors than was generally thought. He was in cordial agreement with all Sir Havelock Charles's postulates as to the best type of man and woman for the tropics, and the requirements essential in passing candidates for service in the tropics.

Lieutenant-Colonel A. M. Davies, I.M.S, who expressed his general agreement with the opening paper, included among other reasons making a vigorous nervous system desirable the facts that the amount of work that had to be done and that was done by the educated and professional classes in the tropics was habitually greater than at home, and that the amount of sleep that could be obtained was less than at home and more interrupted. Besides an equable temperament, a habit of mind that led to an active habit of body was a mental condition of great value.

Lieutenant-Colonel P. W. O'Gorman, I.M.S., said that temperance in diet, in drink, and exercise constituted the secret of keeping fit and well in a hot climate. Alcohol especially tended to produce the internal congestion alluded to by Sir Havelock Charles. Now that temperance amongst Europeans was more prevalent than formerly, diseases due to heat-stroke, hepatic and digestive trouble generally had been markedly reduced.

Dr. J. Preston Maxwell (Amoy, China) agreed with Dr. Harford's remark that care should be taken that persons passed for service in the tropics were able to take quinine. Some persons were quite unable to do so, and that was a serious matter in malarious regions. Individuals with any family history of mental unsoundness should be rejected without hesitation. Asthma cases as a rule did badly in the tropics, and persons who had passed gravel or small kidney calculi should be rejected, as the trouble was accentuated in the heat, and those individuals rapidly became neurasthenics.

Dr. Basil Price (London) made a preliminary communication, relevant to the subject under discussion, on an inquiry which he had carried out as Secretary to the Association of Medical Officers of Missionary Societies, amongst the missionaries of eighteen of the large English missionary societies who died or retired between 1890–1909. A return had been obtained relating to the causes of death and retirement in 893 missionaries of both sexes working in all parts of the subtropical and tropical zones. This number was made up as follows:

Ordained and lay missionaries	468
Doctors	21
Married women	228
Unmarried lady missionaries	176

The number of deaths was actually 623, but of these 32 were unclassified, leaving a total of 596. The retirements numbered 265, the cause being known in 243 of them.

A.—*The Causes of Deaths.*

1. *So-called Preventable Diseases.*

		Per cent.
Malaria	96	= 16
Enteric	65	= 10
Tuberculosis	44	= 7.4
Dysentery	36	= 6.4
Blackwater fever	36	= 6.4
Cholera	36	= 6.4
Typhus	22	= 3.8
Small-pox	20	= 3.2
Sunstroke } ... ... Heatstroke }	9	= 1.4
	364	or 61

2. *Various Conditions.*

		Per cent.
Childbirth with complications	26	= 4.3
Cardiac conditions	21	= 3.8
Accidents	18	= 3
Cancer	14	= 2.3
Pneumonia	14	= 2.3
Senile decay	8	= 1.4
	101	

3. *Unusual Causes.*

Types of disease occurring in very small numbers or unclassified	163

It would be noticed that 364 out of the 628 deaths, or 61 per cent. of the total number, were due to a class of disease which was largely preventable. This emphasized the need of disseminating knowledge with regard to such diseases amongst those going abroad to tropical or subtropical zones.

B.—*The Causes of Retirements (243).*

The figures emphasized markedly the incidence of nervous and mental conditions as a cause of breakdown.

		Per cent.
Nervous breakdown of a neurasthenic type 65	95	= 39
Insanity—melancholia ... 30		
Tuberculosis	32	= 13
General breakdown—"debility" ...	14	= 5.7
Cardiac conditions	11	= 4.5
Post-malarial conditions	11	= 4.5
Senile decay	10	= 4.1
	173	
Other causes of various and isolated character	70	
	243	

The rather heavy mortality and incidence of tuberculosis (of various forms) came rather as a surprise. Of the 76 cases, 44 died in the field and 32 retired. In 20 cases family predisposition was stated positively to be present, but the actual development of symptoms appeared abroad, after in most cases a thorough medical examination before departure from England, and was put down to contraction of infection owing to environment and nature of work.

Dr. D. E. Anderson (London) said that all knew certain countries and islands in the tropics were so healthy as to be used by Europeans as health resorts, so that in any case if the tropics were condemned certain exceptions must be made. Madeira, the Canary Islands, the Bahamas, Natal, Rhodesia, and most of the islands of the Pacific, had always been looked upon as possessing a healthy climate. Even Mauritius, before malarial fever and the plague reached the island, was a very healthy place.

Dr. Sambon (London) said that some years ago he had put forward the view that the white man should prove as capable of acclimatization in India as in subtropical regions of America and Australia. The ground for this belief, which met with little acceptance, was that mortality and morbidity in the tropics were not due to the tropical climate *per se*, but mainly to parasitism. At that time little or next to nothing was known with regard to the true causation of tropical diseases. Most of them were ascribed to peculiar meteorological conditions of tropical regions. Now, however, a large number of these diseases had been thoroughly worked out, and all such as had been properly and fully investigated had proved to be parasitic diseases. Moreover, preventive measures taken against such diseases had proved surprisingly effective. The great victories over malaria and yellow fever, for instance, and more especially Major Gorgas's herculean labours in Cuba and in the Panama Canal zone, showed very clearly that the healthiness of the tropics was entirely within the control of the white man. From the discussion that had taken place he gathered that both Sir Havelock Charles and others there present believed that a long residence in the tropics was undoubtedly pernicious to the health of the white man. He had not heard all the opener's remarks, but had arrived in time to hear Sir Havelock Charles say: "What are the conditions of the European after several years of strenuous life in the tropics?" He would like to ask, in reply, What is the condition of a European after several years of

strenuous life in London or any other European town? All speakers had stated that to tropical places only perfectly healthy people should go. This would, no doubt, be a great desideratum, but the same advice might be given to people abroad intending to take the risks of life in this country; they should be sure to start with a clean bill of health if they expected to remain well after several years of strenuous life in London, Manchester, Birmingham, or Glasgow. He agreed that unhealthy Europeans should not be sent to the tropics, not only for their own sake, but also for that of the tropics, where already Europeans had been scattering broadcast their own diseases, and especially tuberculosis. The healthiness of the tropics varied considerably from one place to another. There were no tropical diseases, strictly speaking, but there were many diseases variously distributed in different tropical countries. Great changes had occurred during historic times in the healthiness of tropical countries. Some places had been rendered far more unhealthy through the introduction of new diseases, such as malaria, leprosy, syphilis, and tuberculosis, which were in such places previously unknown; others, through improved hygiene, had been rendered very much healthier, and, indeed, many compared most favourably with the best known European health resorts. Of course, the white man going to live in some tropical country must be prepared to contract the diseases peculiar to that country, to the infective conditions of which he might become exposed. But there were some very instructive examples at home of the same sort of thing—for instance, in the case of children when first sent to school. In considering the unhealthiness that in the past had been witnessed in Europeans after a long spell of life in the tropics, the state of their health at the time they left for the tropics, and the diseases which caused either their death or their ill health after returning home, had been somewhat overlooked.

Dr. G. M. HARSTON (Hong Kong) held that an equable temperament was of much value in withstanding the stress of life in tropical countries. The correction of a latent astigmatism was an important factor before proceeding to the tropics.

Professor FÜLLEBORN (Hamburg) said that his knowledge of the German colonies led him to agree fully with what Sir Havelock Charles had said. It was customary in Germany to give those who were about to live in the tropics 1 gram of quinine in order to see whether they could take the drug or not.

Mrs. B. S ELGOOD (Cairo) said the type of woman who did well in Egypt was the stout, well-formed, solid girl.

Dr. W. T. PROUT, C.M.G. (Liverpool), said that while, of course, any actual organic disease excluded a man from service in the unhealthy parts of the tropics, there were occasionally men who, while it was impossible to indicate any actual organic defect, yet were not suited for a useful life in the tropics. Young men with an obvious tendency to obesity and weedy, undersized youths were cases in point. On the whole, the blonde type of man proved more resistant in the tropics than the brunette. He could not agree with Dr. Sambon's views that the deterioration in health which took place in certain parts of the tropics was entirely parasitological. Prolonged residence, especially if combined with strenuous work, in a climate characterized by high temperature, with little range, and a high degree of relative humidity, produced not only a physical but a mental deterioration, associated with a considerable degree of anaemia, quite apart from any bacterial infection. An analogous condition occurred among masseurs employed in bathing establishments. Any one unable to take quinine should be absolutely rejected.

Dr. ANDREW BALFOUR (Khartoum) did not agree with Sir Havelock Charles that cases of functional albuminuria should without exception be rejected. Many cases were benefited by residence in certain tropical countries.

Dr. ST. GEORGE GRAY (Southern Nigeria) agreed that long-continued moist heat was a potent factor in the causation of diseases in the tropics. The quinine test was an excellent precaution and should be adopted.

Major P. DEE, I.M.S., after giving an interesting account of the work required of a medical officer in many stations in India, said that when he considered the hours of actual work and the responsibility the medical officer in India had to take upon his shoulders, the marvel was that white men could work for so long as they did in what was termed an unhealthy climate.

The PRESIDENT (Dr. F. M. Sandwith), in summing up the discussion, said he was struck with the whole trend of the remarks, which tended to show the full responsibility of taking up the "white man's burden," and of sending, when possible, to hot countries the best Europeans, rather than the second best. He emphasized Sir Havelock Charles's remarks on the importance of a stable nervous system, and drew attention to the fact that in hot countries the lunatic inmates of asylums were more excited and maniacal during summer heat than in the cool winter months. As asthma must be defined as a neurosis, it was obvious that it might sometimes be a bar to intending candidates, though he (the President) knew of men doing very good work in the tropics in spite of chronic asthma. The happy combination of physique and intelligence had been wanted in all times, and was specially demanded by the Duke of Wellington in the Peninsular campaigns. He wished to utter a word of protest against the ill-founded idea in some parts of Africa that the longer a missionary had served in Africa the less need was there for him to come home every two or three years. Though it was quite true that some men could become immune against malaria by long residence, they did not become "salted" against all the ills of a hot country, and he thought it very important, for physical, moral, and intellectual reasons, that no white man should spend many years on end without refreshing himself with the contact of his equals and superiors. With regard to psoriasis, a great deal depended upon the extent of its distribution. If the whole of a man's skin was affected, it was obvious that his sweat glands could not carry on their normal function, and advisers at home must remember that the skin was all-important to a man in the tropics. Personally, he had never had to refuse a candidate for obesity; on the contrary, the Anglo-Saxon race often had to be taught that a little fat was necessary. There was no doubt that a few rare individuals were unable to take even small doses of quinine, and in doubtful cases he had never found any difficulty in persuading candidates to try some experimental doses of quinine before they were finally accepted.

Sir R. HAVELOCK CHARLES, in his reply, said: Colonel Hendley has referred to the commonness of jaundice in India and the quick recovery therefrom. In this I agree, but the embargo I placed on it was in the case of an applicant the subject of chronic dyspepsia, loose bowels, disordered liver leading to attacks of jaundice. Such a one is unfit for India. He is not in the same category with the healthy man who from exposure contracts an attack of catarrhal jaundice. The sequelae would be quite different in the two cases. As to length of service in India without leave. It is to the interest of the employer of labour as well as the employee that leave should be taken at stated intervals. I consider that the rules for leave by the Government of India are based on this, and that on the whole they are very fair. Hardship sometimes occurs, due to the exigencies of the service, but that "is all in the day's pay." As to psoriasis: I referred to individuals the subjects of the disease from infancy. It stands to reason that if the skin be unhealthy the mucous lining of the body will have more to bear and organs to which the skin has a vicarious action will have to play more than their part. Still more—here is an individual with disease showing objective signs. He, in case he wishes to simulate subjective symptoms, will be the master of any medical board before which he may appear. For this reason alone he is unfit for Government service. Dr. Harford backs me up regarding the necessity of a strong nervous system, and he refers to want of sleep. I desire to be more emphatic on the point. Insomnia is about the worst thing that can occur to an official—from it anything will arise. Colonel Joubert de la Ferté has spoken very smooth things of the present state of India. No doubt improvements are many, and the amenities of life in the

large cities are much pleasanter; but in spite of all this, if the European is to do good work there he must be specially selected. The ordinary type of "weak-kneed" and "broken-backed" individual will not do now more than formerly. The work is hard, the climate is trying. Colonel Davies has drawn attention to the heart and nervous system. Subjects of athlete's heart, after careful examination, may be taken for civil life provided the arteries be normal. I agree regarding the importance of the nervous system. Dr. Sambon considers that the only thing to fear in the tropics is parasitic disease. This is not so. Clinical study has strongly shown me that climatic conditions play a most important part, and that the virulence of the incidence of many affections is accentuated by tropical environment. Yielding to no one in the regard in which I hold laboratory work, I maintain that any opinion on the matter based on laboratory work alone is futile. Clinical experience in the tropics at the bedside of the sick, examinations of returned invalids, with a good working knowledge of laboratory methods, must impress on any one whose practice has been extensive that, apart from parasitic invasion, there is still the climatic condition to be considered. The anthropologist, in following out the diversities of races, knows the effects of climate, and in the evolution of a people its environment, apart from parasitic action, is one of the strongest factors. Dr. Sambon states definitely that the European can be acclimatized in the tropics, and Dr. Fülleborn asks a question on the point. I deny Dr. Sambon's statement *in toto*. I would suggest to him a study of the Eurasian question in India. A quest to find any descendants of the Greek armies that followed Alexander and settled in India, and of descendants of the subjects of the Indo-Greek and Indo-Parthian dynasties. Again, in modern times, we know that it was only so long as the Moghul Empire was supported by fresh blood from Central Asia that it remained strong. Decadence of even the Central Asiatic followed in a few generations when settled in India. This is a very interesting question. I base my opinion on long observation and careful study of Asiatic peoples and their history. Dr. Elgood supports my contention regarding the "type of woman not wanted." I do not agree with her in advocating a lazy life for women. Give them occupation. Let them have "exercise," but do not confound it with "fatigue." Let them govern themselves with common sense—if possible—in the selection of pursuits for either study or exercise, bearing in mind that man should be manly and virile, and woman should be womanly and feminine. Nature abhors the half-and-half. From Dr. Balfour I disagree when he suggests that the subjects of physiological albuminuria might be recruited. Why should Government burden itself with an inferior article when it can procure a better? Let philanthropic societies employ such individuals!

A REPORT ON THE SERUM TREATMENT OF A HORSE SUFFERING FROM TRYPANOSOMIASIS.

By A. Connal,
West African Medical Staff.

The serum treatment of trypanosomiasis in horses and cattle has been tried in numerous instances, with varying success. A permanent cure did not result in the present case, but the temporary improvement was definite, and one or two suggestions arise which are worthy of further consideration.

Trypanosomiasis in cattle and horses is very common in the neighbourhood of Lagos. Amongst the large herds of cattle in the vicinity of the town it is rare to see a well-nourished animal, the great bulk being very emaciated. The blood from a few of the bullocks has been examined, and has been found in every case to be heavily infected with trypanosomes of the dimorphon type.

Biting flies are very numerous. *Glossina palpalis* is not uncommon. The grounds of the Medical Research Institute are only a few yards from the railway line which passes from Ebute Metta, Lagos, to Jebba in Northern Nigeria. On more than one occasion a *Glossina palpalis* has been caught in the grounds shortly after a train from up-country had passed by. *Glossina morsitans*, on the other hand, must be rare, because no specimen has yet been sent to the institute from the district. Thus there is the occurrence of *Glossina palpalis*, yet no human trypanosomiasis, and the apparent absence of *Glossina morsitans*, with a very widespread infection of cattle with trypanosomiasis.

Of the other blood-sucking flies, numerous species of Tabanus are found, Stomoxys is very common, also Hippobosca, while Chrysops and Haematopota are rare. On one occasion, when there was a trypanosomiasis horse in the stable, Stomoxys was a great pest. Replete with their meal, they dotted the stable walls, and were easily caught. On squashing the insects on a slide and examining the fresh material under the microscope, a few living trypanosomes were seen. On stained specimens, however, it was found that the majority of the parasites were degenerated and broken up.

It should be mentioned also that at certain times of the year (December till April) large droves of donkeys come to the town from up country. These animals, too, were emaciated, and it was a common occurrence, in spite of the proverb, to see a dead donkey by the wayside. No attempts were made to get blood smears from these animals. It is extremely difficult to overcome the superstitious prejudices of the natives, and they object even to the approach of the entomologist.

As regards the actual experiment, horse No. I was sent to the laboratory by Mr. Cuthbertson, of Lagos, on February 28th, 1910. The animal had been certified by the Government veterinary official in the previous year as suffering from trypanosomiasis. No treatment had been given, and the horse had been used simply as a control in the experimental treatment of other animals. Shortly after the termination of the veterinary appointment, Mr. Cuthbertson saw signs of improvement in his horse, and at his suggestion blood smears were examined on February 20th, 1910. No parasites were found. A week later the horse was sent to the laboratory for observation. The blood was examined at different hours of the day, regularly thereafter, and no trypanosomes were ever observed. On March 5th, however, at 1 p.m., very scanty filaria embryos were seen, and at other times during the next two months these parasites were observed, always in the daytime. The question arises, Were the filaria embryos directly or indirectly responsible for the disappearance of the trypanosomes? Both parasites live in the blood plasma. Do the filaria embryos absorb the food of the trypanosomes, and thus starve them out, or are there toxic products inimical to the trypanosomes?

It remains to be mentioned that prominent chains of enlarged glands were present in horse No. I. These glands were especially numerous in the upper part of the hind and fore legs and in front of the chest. Each gland in turn broke down and ulcerated, leaving a large ulcerating surface with exuberant granulations. The animal gradually grew weaker, until the experiment had to be stopped, towards the end of April, owing to the impossibility of sterilizing the skin efficiently in order to withdraw blood for the sernm. Horse No. II was a young animal which had apparently been in good health until about the middle of February, 1910. At this time it suddenly went off its feed, sickened, and had several rigors. On March 3rd numerous trypanosomes of the dimorphon type were found in the blood. The animal rapidly emaciated, walked with great difficulty, and stood with the legs far apart, the head hanging low, and the penis long and pendulous. On March 11th blood was withdrawn from a vein in the flank of Horse I. The blood was allowed to coagulate in a sterile flask, and after twenty-four hours the serum was injected intravenously into Horse II. The first dose was small, 1.5 c.cm. On the following day 5 c.cm. were injected; 20 c cm. were administered on March 23rd, 40 c.cm. on March 29th, and 75 c.cm. on April 9th. Thereafter the treatment had to be stopped on account of the illness of Horse I.

The diminution in the number of trypanosomes will be seen in the accompanying table. When the treatment was begun the parasites numbered 312 in one breadth of the slide. The number was one-third less two days later, and in other six days no trypanosomes were seen in six breadths of the slide. Thereafter the number remained small, and for several days at a time none was seen.

The method of counting was to make a smear the complete breadth of the slide at some part, stain with Giemsa, and estimate the number of parasites in six complete

breadths of the slide. With the magnification employed, six breadths equalled 600 fields, and for comparative purposes this was thought to be sufficient.

The improvement in the general condition of Horse II was remarkable. By the middle of April he was able to trot and gallop, held his head well up, and had put on flesh. Since I came home on leave, however, I have heard that he steadily went back after the treatment was discontinued, and that he died about the end of May.

Numerous attempts were made to inoculate the trypanosomes into *Mus rattus*, *Mus decumanus*, and one species of field rat and of field mouse, without success.

The following table, relating to horse No. II, shows the number of trypanosomes discovered on certain dates, and the apparent results of the injection of serum:

Date.	Trypanosomes.	Serum.
1910.		
March 9th	307	
,, 11th	312	1 5 c.cm. serum.
,, 13th	198	5 c.cm. serum.
,, 15th	163	
,, 17th	117	
,, 19th	none	
,, 21st	3	
,, 23rd	70	20 c cm. serum.
,, 24th to 26th	none	
,, 27th	0.6	
,, 28th	6	
,, 29th to 31st	0.6	40 c.cm. serum.
April 1st to 2nd	3	
,, 3rd to 6th	none	
,, 7th	2	
,, 8th to 11th	0.2	75 c.cm. serum.
,, 12th	2	
,, 13th	18	
,, 14th	10	
,, 15th	5	
,, 16th	2	
,, 17th	2	
,, 18th	7	
,, 19th to 20th	5	
,, 23rd	0.5	

LACTO-BACILLINE (METCHNIKOFF) IN THE TREATMENT OF TROPICAL INTESTINAL AILMENTS.

By JAMES CANTLIE, M.B., F.R.C.S.

WHEN Metchnikoff gave his lecture at the Royal Institute of Public Health in July, 1907, on the uses of lacto-bacilline in the treatment of disease, the writer believed that a valuable therapeutic agent was to hand whereby intestinal ailments so frequently met with in tropical practice could be successfully treated. Inquiry amongst the leading London chemists for the drug proving futile, the writer got Messrs. Martindale to telegraph to Paris for the necessary apparatus and appliances. These promptly arrived in two days, and the "soured milk" was administered at once to three cases of sprue and two cases of post-dysenteric flux (mucus with occasional blood). The cases of sprue all became worse; the diarrhoea increased, the acidity and acid smell of the faeces became more marked, and the bulk and fermenting (gaseous) appearance of the motions decidedly more apparent. After a week's trial the treatment had to be given up. Subsequent trials in other cases of sprue had the same unfortunate ending.

In post-dysenteric flux and in any form of subsequent colitis treatment by either soured milk or the administration of the powder in sugar and water proved disappointing. The only cases in which the treatment could be said to do good were those placed upon a strictly meat diet with which lacto-bacilline in sugar and water was given.

Consideration of the *rationale* of the treatment in cases of sprue would prepare one for a result of the kind. Sprue stools are essentially acid, and, in fact, an acid fermentation seems to be the essence of the ailment; and therefore to increase this by administering a bacillus which thrives in an acid medium would seem to be, and it has proved to be, therapeutically wrong. Of course, the acid fermentation processes in the two states may be opposed, and one might prove detrimental to the other. This, however, is not the case in sprue, and the only conclusion is that the soured milk or the administration of lacto-bacilline in any form is detrimental.

The only cases from the tropics in which the lacto-bacilline treatment has proved of some value will be found in persons suffering from what may be termed a "played-out digestion." This is a condition which every tropical practitioner is familiar with. The patient has lost flesh, the skin is dry and harsh, gastric and intestinal digestion is impaired, there is a fitful diarrhoea, and the patient is inclined to become morose and depressed. In such cases a ten days' course of soured milk treatment not infrequently alleviates the symptoms and strengthens the digestion. After the ten-day course the soured milk treatment should be abandoned, and, after two days' interval, an alkaline mixture should be given for a corresponding period. The interval of two days is advisable, as if the alkali is administered too soon after the lacto-bacilline is left off gaseous disturbances ensue in the intestines with considerable discomfort. Alternating acid and alkaline treatment by any plan of administration is highly advantageous in intestinal troubles of the kind mentioned. The flora of the acid intestinal fluid is not that of the alkaline, and vice versa, and the alternation of the media tends to get rid of organisms which may be detrimental. In the same way the writer alternates the "milk" and "meat" treatment of sprue and other tropical intestinal ailments. The organisms which thrive in a milk medium do not thrive when meat only is given, and vice versa; the flora of the intestine are thereby altered and obnoxious factors may be got rid of. The writer finds corroboration of this idea in suggestions made by Sir Lauder Brunton, and the success attending treatment by this method has proved most encouraging.

DISCUSSION.

Dr. ANDREW DUNCAN (Lieutenant-Colonel, I.M.S., ret.) said that he had adopted Mr. Cantlie's method of treating sprue, with marked benefit. The milk diet almost universally followed had many drawbacks, both from the practical and physiological points of view, whereas the "meat" régime administered according to Mr. Cantlie's plan had given in his (Colonel Duncan's) hands excellent results.

Dr. ROW (India) said the flora of the intestine in both health and in several ailments to which it was subject required to be more carefully worked out before scientific methods of treatment could be established.

PHLEBOTOMUS OR SANDFLY FEVER.

By Lieutenant-Colonel C. BIRT, R.A.M.C.

THIS fever, under various names, has long been known to prevail in the tropics. In the year 1804, Pym, an army medical officer, gave this account of cases which he had observed in the Mediterranean:

> The disease generally comes on like other fevers with slight headache, chilliness, shivering, sometimes sickness at the stomach. These symptoms are in a few hours followed by violent pain in the head, confined chiefly to the eyeballs and forehead, pain in the back and in the calves of the legs. The face becomes flushed and the eyes have a shining, watery appearance, with a slight degree of inflammation like those of a person half drunk. The skin is dry, the bowels in general bound, the tongue foul. The fever ends about the third day.

The military medical reports of Malta, which go back as far as 1822, year by year refer to extensive outbreaks of this febricula during the hot weather among newcomers. Sometimes more than half a regiment would be attacked in their first summer of residence on the island. In their second year and onwards they would be "seasoned," and the incidence would be much less. In 1909 only 6 per cent. of the cases were not first attacks.

Since sandfly fever is of short duration and causes no mortality, its existence had been quite overshadowed by the graver infections caused by the typhoid bacillus, and the *Micrococcus melitensis* respectively. The latter gave rise to 643 admissions in the year 1905, and each case averaged sixty-three days in hospital. When Malta fever was extinguished among the troops by prohibiting the use of goat's milk in 1906, sandfly fever appeared in relief and called for investigation. Thus in the year 1907 there were only 11 cases of Malta and 14 of enteric fever, but there were 340 of sandfly fever, then called "simple continued

fever." In 1908 the incidence of Malta and enteric fevers had fallen to 5 cases of each, but the sandfly fever admissions numbered 354.

Towards the end of the year 1908 R. Doerr[1] published the researches which he had made on a short febrile ailment which attacked a large proportion of the soldiers who had recently arrived at stations on the Dalmatian coast. It was prevalent only during the summer months. Doerr showed by experiment that this fever was caused by an invisible virus, present in the blood during the first day of the pyrexia, which was conveyed by the sandfly, *Phlebotomus papatasii*.

It was suggested[2] that a like study should be made of Pym's fever in Malta. Accordingly the writer was dispatched to that island, in April, 1909, to investigate experimentally the ailment and to ascertain the part played by the *Phlebotomus papatasii*, should it be found there.

1909.	Sandfly fever.	Enteric fever.	Malta fever.
May	8	3	—
June	34	4	—
July	89	—	—
August	47	—	1
September ...	39	—	—
October	26	—	—
November	0	1	—

The prevalence by months of fevers among the troops in Malta is shown above.

In 4 per cent. of the cases of sandfly fever there was pyrexia for			1	day.
In 16 per cent. there was pyrexia for			2	days.
In 30	,,	,,	3	,,
In 23	,,	,,	4	,,
In 12	,,	,,	5	,,
In 9	,,	,,	6	,,
In 3	,,	,,	7	,,
In 2	,,	,,	8	,,
In 0.5	,,	,,	9	,,
In 0.5	,,	,,	10	,,

In 85 per cent., therefore, the temperature was raised for five days only or under.

Sixty-five per cent. of the attacks occurred in soldiers who had resided less than a year in Malta. Ninety-two per cent. is the proportion of seizures in men who had landed less than two years previously. So it is evident that the newcomer is predisposed.

Symptoms.

The onset of phlebotomus fever is usually sudden, though sometimes the pyrexia may be preceded by lassitude, and discomfort for a few days. Chilliness may be complained of, and slight rigors observed, but never the chattering of the teeth of the ague onset. He is attacked with giddiness and a violent headache, chiefly confined to the brow and behind the eyes, exaggerated by the least movement of the head. He has pain in his back and in the calves of his legs, and stiffness of all the muscles of his body, which render him restless, though at the same time unwilling to move in bed, since he finds that a change of position only aggravates his discomfort. He is drowsy, and resents being disturbed. Sleep is either much broken or absent. His face is deeply flushed and somewhat tumid. His eyelids are slightly swollen and are half open. His eyes are bloodshot, so that Pym's description of the half drunken look of these patients is characteristic. The eyeballs are sensitive to movement and gentle pressure. The temperature rises to 101°–103° F. in a few hours, but the pulse remains slow, often not more than 80. It has been noted as low as 40. The patient may have vomited. This symptom occurs in about 25 per cent. of the cases. Diarrhœa with watery stools was marked in 20 per cent. Constipation is commonly observed.

The tongue becomes coated with a thin white fur, except at the tip and edges. It is inclined to be large and flabby. Taste is impaired. Loss of appetite is constant. Nausea is a frequent symptom. There is often congestion of the fauces and vesicles on the palate are frequent. Throat symptoms, however, are rarely noticed by the patient. There is no expectoration nor coryza. The skin is usually dry, though occasional perspirations may occur. But the profuse sweating, such as ends a fit of ague, does not take place. There is often much dilatation of the capillaries of the face, which causes puffiness of the eyelids and features, and gives a dissipated look to the sufferer. In the early Sixties, indeed, alcoholic excess was supposed to be the cause of Pym's fever. Many of the unfortunate soldiers who were attacked were shown in the army returns under the heading "Ebriositas." The erythema may extend to the neck and upper part of the chest. Rashes are absent, except those caused by insects. The joints are not swollen.

Blood was obtained by venepuncture in 23 instances.

Cultures on agar, in peptone broth, and in peptone bile have remained permanently sterile. Agglutination examinations were made in 47 cases. There has been no clumping of the *Micrococcus melitensis*, *Bacillus typhosus*, *B. paratyphosus* A and B by dilutions of the serums nigher than those in which this occurs with normal blood. No malarial or other parasites, nor any structural alterations in the blood elements have been discovered. Leucopenia is an almost constant sign, and of considerable diagnostic value. The average of 35 estimations was 5,428 leucocytes per cubic millimetre. Several counts have been under 2,500. Franz's enumerations in 18 Dalmatian patients gave somewhat lower figures—3,700, 2,900, 3,300 leucocytes per cubic millimetre on the first, second, and third day of the illness. McCarrison obtained an average of 5,250 leucocytes per cubic millimetre in 20 Indian cases. The polynuclear leucocytes are diminished. They numbered 56 per cent. instead of the usual 65 to 75 per cent. The large and medium sized mononuclears are proportionately increased; the lymphocytes and eosinophiles decreased.

The negative results obtained in the blood examinations excluded malaria, relapsing, trypanosome, Malta, typhoid, streptococcic, staphylococcic, tetragenus, pneumococcic, and influenzal infections, and also Rogers's seven-day fever, which he attributes to a typhoid-like organism.

It was first necessary to ascertain if this short fever of Malta was a specific disease. Here experiments on the lower animals gave no assistance, for they were all immune to 5 c.cm. of the blood of a patient in the first day of his illness. When the nature of the investigation was explained to the gunners of No. 99 Company of the Royal Garrison Artillery, many of them came forward voluntarily and offered to submit to experiment. Had it not been for their intelligence and self-sacrificing courage, which paid no heed to their own sufferings, the inquiry into the origin and causation of Pym's fever would have remained barren.

Experiments with Blood.

1. Private J. Matthews, 2nd Somerset Light Infantry, was attacked with head and back ache on the morning of August 13th, 1909. His temperature was raised to 101° F. His face was flushed, and his conjunctivae injected. His tongue was large, moist, and coated with a thin white fur, except at the tip and edges. He was constipated. His leucocytes were reduced to 5,900 per cubic millimetres. There were no malarial parasites in films. Serum reactions were negative. Blood cultures remained sterile. Eighteen hours after the onset 9 c.cm. of blood were withdrawn from the median basilic vein. His febrile symptoms continued throughout the second day, accompanied with epigastric pain and tenderness. He made a rapid recovery.

2. Gunner Thomas Carey, 99th Company Royal Garrison Artillery, volunteered to receive Matthews's blood. Accordingly 1.5 c.cm. of the blood withdrawn from Matthews at 6.30 p.m. August 13th, 1909, were immediately injected subcutaneously into Carey's forearm. Three days sixteen hours later, on the morning of August 17th, he was seized with a feeling of chilliness, malaise, severe head and back ache. He was incapacitated from work, and lay on his bed tossing about, trying to get relief from his pains. His temperature that evening was 101.4° F. His face was deeply flushed, and his eyes were injected, and were tender to pressure and hypersensitive to light. His tongue was moist and coated with white fur. Loss of appetite, thirst, and constipation were present. There was no rash nor trace of the bites of insects. On the second day his fever was unabated, but his pulse-rate was 50 only. His leucocytes were 5,900 per cubic millimetre. The polynuclears were diminished to 57 per cent. The medium-sized mononuclears and transitionals were increased to 19 per cent. No malarial parasites were found. His temperature fell on the evening of the second day, and he made an uninterrupted recovery.

3. Gunner Albert Edward Bradley, at his own wish, received 2 c.cm. of the blood withdrawn from Matthews. Four days and sixteen hours after the subcutaneous inoculation he was compelled to take to bed on account of intense frontal headache and pains in his back and limbs, which gave him no ease. He had nausea and vomiting. His temperature ascended to 103° F.; his pulse remained below 90. He had the characteristic bon-vivant appearance of sandfly fever. He obtained but little sleep during the night, troubled with pains in his head,

eyes, back, and knees. Next day his face was still flushed and his conjunctivae injected. His tongue was coated with white fur, except at the tip and edges. He complained of much stiffness generally. His leucocytes were reduced to 5,600 per cubic millimetre. The polynuclears were diminished to less than 50 per cent. The medium-sized mononuclears were relatively increased. Improvement began on the third day. No complication attended his convalescence.

4. Private T. Gillespie, 2nd Somerset Regiment, was admitted to hospital on September 15th, 1909. He came from barracks, in which numerous cases of sandfly fever had occurred. His forearms bore marks of *Phlebotomus* bites. Notwithstanding this, he was emphatic that his illness was caused by the sun, to which he had been exposed many hours that day. The theory that most of the short non-malarial pyrexial attacks of the tropics are due to solar influence has held sway so long and tenaciously that it was deemed advisable to test the virulence of the blood of one of these "sun-fever" cases. The attack came on suddenly, with pains of a severe character in his head, back, and calves of his legs. His comrades noticed that he looked very ill and could hardly walk. He bore the aspect of sandfly fever. His face was congested and puffy. His conjunctivae were seen to be deeply injected through his heavy, half-open eyelids. His temperature was 103.2°; his pulse 72 only. He complained of a racking headache, chiefly confined to the forehead and eyes, which were intolerant to light, movements of the head, and gentle pressure. His tongue was large, moist, and coated with a thin fur, except at the tip and edges. His blood contained no parasites, but the leucocytes were reduced to 6,500 per cubic millimetre. The polynuclears were decreased to 42 per cent., and the medium-sized mononuclears increased to 22 per cent. Next day, though his temperature was lower, his symptoms were unabated. He was constipated and vomited once. He began to improve at the end of forty-eight hours. His pulse-rate remained below 60 after the first observation, though his temperature did not fall till the fourth day. Twenty-three hours after the onset 9 c cm. of blood were obtained by venepuncture; 3 c.cm. were inoculated into peptone broth, which remained sterile.

5. Gunner Albert Meades, 99th Company, Royal Garrison Artillery, elected to receive 3 c.cm. of Gillespie's blood immediately after it had been withdrawn. He was in excellent health, and had never been ill. On the evening following the subcutaneous injection he felt languid. Next day he had slight headache, loss of appetite, and disinclination for exertion. His bowels were sluggish and his tongue was rough and furred in the centre. Purgatives gave some relief, but his usual vigour did not return. The morning of September 22nd, five and a half days after inoculation, marked the onset of a very severe attack of phlebotomus fever. Headache began, accompanied with pains in his legs, knees, and back, which continued with increasing severity. In the evening his flushed face, tumid features, half-closed palpebral apertures, suffused conjunctivae, and his look of distress were typical signs of the infection. One-third of a gram of phenacetin was given to alleviate his headache, which had now become unbearable. On the second day of the attack his symptoms were unrelieved. He vomited once, and had much nausea and distaste for food. His tongue was thickly coated with white creamy fur, except at the tip and edges. He could scarcely move in bed, on account of the pains and stiffness in all his muscles. His headache was still intense. He had photophobia. Ocular movements were attended with pain. He was drowsy, restless, and resented being disturbed. His pulse-rate remained below 80. His leucocytes amounted to 4,125 per cubic millimetre only. The polynuclears were diminished. No malarial or other parasite was present. On the third day improvement began, though he was much harassed by stiffness and pain on moving his back and leg muscles. He slept the greater part of the day. On the fourth day his temperature declined and his symptoms were becoming less pronounced. His tongue remained dirty. His convalescence began on the fifth day and was uninterrupted. At no time did he exhibit any rash or marks of insects. His case affords a good example of a prodromal stage which has been observed by Pick in sandfly fever. A few examples of malaise and slight disorders of digestion preliminary to the onset of the pyrexia have been noted in the Malta epidemic.

6. Gunner George Dyer, of the same company, was Meades's companion in offering himself for experiment; 3 c.cm. of Gillespie's blood, immediately after it was shed, were injected beneath the skin of his forearm. Five and a half days later he complained of chilliness, headache, malaise, distaste for food. His temperature soon rose to 102 4° F.; the pains in his head, back, and limbs were so severe that he passed an almost sleepless night. Next morning all his symptoms were aggravated; his face was much flushed and his eyes suffused; his headache was tormenting; the general stiffness of his muscles curtailed his movements in bed; his tongue was thickly coated with brownish-white fur, except at the tip and edges; he had vesicles on the mucous membrane of his mouth and palate; his pulse was slow and irregular; his leucocytes were 8,575 per cubic millimetre. There was a decrease in the polynuclears and lymphocytes, and an increase to 38 per cent. in the medium-sized mononuclears. There were no malarial or other parasites. On the third day the intensity of his symptoms was becoming subdued, and he spent many hours in sleep. The fever subsided on the fourth day. A leucocyte count then gave 5,970 per cubic millimetre. On the fifth day he had nearly recovered his usual health, but his pulse was still slow and irregular. No rash was observed throughout his illness.

The evidence from these experiments shows that the blood of patients suffering from the short summer fever of Malta is virulent, and capable of inducing the fever in healthy men, if taken within twenty-four hours of the onset, and that the blood of a person who attributed his illness to exposure to the sun was virulent, and induced fever in two normal individuals.

The nature of the virus was investigated by filtration experiments.

Five c.cm. of Matthews's blood was mixed with 45 c.cm. of sterile physiological salt solution before coagulation had taken place. The mixture was placed in a Cobbett's filter which had been tested with an emulsion of *Micrococcus melitensis* and sterilized. It was fitted with a "Chamberland F. candle controlle." Filtration was conducted under the pressure of gravity only, at a temperature of 78° F.; 20 c.cm. of filtrate were collected in twenty-four hours, which proved sterile on culture on agar. After completion of the process the filter was again tested with the *M. melitensis* and was found to be proof against this minute organism.

Seven c.cm. of this filtrate, representing 0.7 c.cm. of fresh blood, were injected beneath the skin of the forearm of Gunner Edwin George Bennett, 99th Company Royal Garrison Artillery, who willingly consented to offer himself for experiment. Four days and twenty-one hours later he began to feel unwell. His head and back ached. His face became flushed; his eyes were suffused and the eyeballs tender on pressure. His temperature was raised to 101° F., but his pulse-rate was below 60. He passed an almost sleepless night, caused by the pains and aches in his head, eyes, and back. Anorexia and constipation were marked. His leucocytes were 10,100 per c mm. There was a relative diminution in the polynuclears, with an increase in the medium-sized mononuclears. His temperature did not reach the normal level until the eighth day. Convalescence was rapid.

Six c.cm. of the same filtrate, which had been preserved in the dark at a temperature of 75° to 80° F. for a week, were injected beneath the skin of Gunner James McCauley, another willing volunteer. This corresponded with 0 6 c.cm. of undiluted blood. Four and a half days later he began to feel unwell, lost his appetite, and complained of headache. He felt inclined to lie down all day. His evening temperature was 99.4° F. and his pulse 72. His face was congested and his eyes were suffused and heavy. Next day his symptoms passed off.

Hence the virus of sandfly fever can pass through a Pasteur-Chamberland filter and can retain its activity *in vitro* for a week.

The sandfly of Malta is the *Phlebotomus papatasii*, which makes its appearance in scant numbers at the beginning of May. It becomes more numerous as summer advances, and disappears at the end of October. It has been found in all places where cases of Pym's fever arose. Nearly 3,000 of these flies were captured and put in cages in order to study their habits and life-history; but they are short-lived in captivity. Grassi,[3] the authority on *Phlebotomus*, succeeded in rearing it from ovum to imago only after years of failure and in finding its larvae in the field. Though many officers, non-commissioned officers, and men of the R.A.M.C. made strenuous efforts to discover the breeding places of the sandfly in Malta last year, they were all disappointed. Captain P. J. Marett, R.A.M.C., has now been successful. In June of this year he found the larvae and pupae of *Phlebotomus* in the interior of loosely constructed stone walls, and has reared them to maturity.

Experiments with Infected Sandflies.

Gunner Finn, who was attacked with the usual symptoms of sandfly fever, accompanied with epigastric pain, vomiting, and diarrhoea, introduced his forearm into a cage containing recently captured phlebotomi, ten hours after the onset. On withdrawing his forearm half an hour later there were marks of seven punctures, which rapidly became the centres of urticarial spots. These vanished in a few hours. No trace of the bites was visible next day.

Doerr had shown that the virus of the Dalmatian fever undergoes elaboration in the *Phlebotomus*, since they are not infective immediately after sucking virulent blood

These infected sandflies were therefore carefully watched for seven days, at the end of which Lieutenant H. G Gibson, R.A.M.C., introduced his forearm into their cage, and was bitten by one fly only. A small irritable papule was the result, which remained visible for forty-eight hours.

Seven days after being stung he began to feel ill. Nausea and repeated vomiting came on. Headache, vertigo, pains in his eyes, back, lower limbs, and abdomen caused him to pass a sleepless night. Movements in bed were attended with much discomfort. He had the usual appearance of Pym's fever, marked by the deep congestion of his face and conjunctivae,

and somewhat swollen features. His tongue was coated with a thin white fur. Loss of taste and appetite, much nausea, giddiness, constipation, stiffness in his trunk and limbs, continued. His temperature was raised to 100.2° F., but the pulse-rate was 66 only. At the end of the third day his symptoms had subsided.

Another cage of sandflies was infected by Private Stansbury ten hours after the onset of a typical attack of phlebotomus fever. Though several of the insects sucked his blood, no trace of their bites remained next morning.

Ten days later, Corporal H. Griggs, R.A.M.C., put his forearm into the cage and was thrice stung. After an incubation period of six days and eight hours he began to feel chilly and to suffer from severe frontal headache, giddiness, pains in his legs and back, anorexia, thirst, and high fever. Next day his symptoms were aggravated; he felt weaker and became faint when he attempted to stand. He was constipated. On the morning of the third day he was prostrated with pains in his head, trunk, and limbs, weakness and giddiness. His face was much flushed, his conjunctivae suffused, his eyes tender and intolerant of light. He had the aspect of severe illness. His tongue was large, moist, and coated with white fur except at the tip and edges. Examination of his blood showed no parasites, and gave negative reactions with the *Micrococcus melitensis* and *B. typhosus*. His leucocytes were reduced to 4,050 per cubic millimetre. His pulse continued slow and irregular throughout the fever. There was no amelioration of the symptoms until the seventh day. He rapidly regained his usually robust health.

A cage containing about seventy sandflies which had been allowed to feed on three patients in the first day of their pyrexia was conveyed for the writer to London by Lieutenant-Colonel J. J. Gerrard, R.A.M.C. Sir William Leishman, Lieutenants H. S. Ranken and F. W. M. Cunningham, R.A.M.C., proffered their forearms to the flies immediately after their arrival at the Royal Army Medical College, London. Sir William Leishman is in doubt whether they attacked him. He could find no trace of a puncture.

Lieutenant Ranken was twice bitten. Minute ecchymoses formed round the site of the stings. Five days later he felt cold and uncomfortable, and suffered from frontal and temporal headache. Next day his malaise continued, and diarrhoea began, which remained uncontrolled until the fourth day. He then speedily regained his health. No pyrexia was noted.

Lieutenant Cunningham was bitten by one *Phlebotomus* only. The mark of the puncture disappeared in twenty-four hours. After an incubation period of five days he began to feel unwell. He had headache, weariness, and general malaise. Diarrhoea began and continued next day. On the third and fourth days he felt well. On the morning of the fifth day he had a rigor, which some minutes later recurred with greater severity; no thermometric observation was then made; his pulse-rate was 90. Shortly afterwards he fell asleep, and woke up feeling well.

Franz[4] has noted that in those cases of sandfly-infection in which the intestinal symptoms are pronounced the temperature may remain within the normal limits.

This experimental evidence shows that the sandfly of Malta, *Phlebotomus papatasii*, can convey the virus, and that the bite of one fly only is sufficient for the purpose; also that the sandflies are infective seven to ten days after sucking virulent blood.

Sandfly fever is prevalent throughout the Mediterranean area. In the first half of last century it was common in Gibraltar—July was the month of greatest incidence. Of recent years the number of cases among the troops has much diminished. Sandflies are now only sparsely scattered on the Rock. When our troops first occupied Cyprus the infection was rampant, but it is now less in evidence. In the old records of the military occupation of the Ionian islands, Corfu, Paxo, Santa Maura, Cephalonia, Ithaca, Zante, Cerigo, which date back to 1817, Pym's febricula occurred in summer epidemics in the British garrisons. July was the month of greatest incidence.

We read that at Santa Maura in the year 1828, the fever began in June and ended in October, but not before almost every individual had been attacked.

Surgeon-General J. G. MacNeece and the writer found that both the fever and the *Phlebotomus papatasii* existed in Crete in 1909. Sandfly fever had been there recognized as an infection distinct from ague by Major A. E. Master and other medical officers. The suffused conjunctiva had caused it to be given the slang name "pink eye."

In Dalmatia the epidemics may assume great proportions. In one station 42 per cent. of the Austrian troops were attacked in July and August. The disease on the Adriatic littoral is a graver ailment than the Malta type. Convalescence may be protracted for weeks on account of mental depression, giddiness, disorders of digestion, etc.

In Egypt between 200 and 300 cases occur in the British garrison every year. The writer's own experience of the Aden summer fever enables him to say that it is similar to, though more severe than, the Malta infection.

In India explosive summer outbreaks occur in many parts, notably in Peshawar and the Punjab generally. As in Herzegovina, the disease may assume a grave aspect, and cholera-like symptoms have been noted. In 1906, 1,220 cases occurred among 3,521 native soldiers stationed at Abbottabad. September was the month of greatest incidence, when there were 556 admissions. The *Phlebotomus papatasii* is widespread throughout India. The epidemics in Chitral and Kila Drosh were closely studied by Captain McCarrison[5] in 1903–4, who suspected that the sandfly might be the agency by which the fever was spread. Unfortunately his experiments failed. He was on the verge of the discovery afterwards achieved by Doerr.

Seventy or eighty cases are recorded each year in the returns of our troops stationed in the Straits Settlements.

For the prevention of the disease isolation of the patient during the first forty-eight hours only of his illness in sandfly-proof nets is required. Doerr[6] has shown that the blood is avirulent after the end of the second day.

Captain Marett's discovery of the pupae and larvae in the crannies of sun-parched walls, coupled with the fact that the sandfly months are the rainless months in every part of the world, suggests that moisture is inimical to them. It seems probable that their numbers might be lessened by spraying their haunts with sea water in the maritime areas where sandfly fever is epidemic.

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[1] Doerr, *Berl. klin. Woch.*, October 12th, 1908. [2] The Experimental Investigation of "Simple Continued Fever," *Journal Royal Army Medical Corps*, 1908, vol. ii, p. 566. [3] Grassi, *Ricerche sui Flebotomi*, 1907. [4] Doerr, Franz and Taussig, *Das Pappatacifieber*, 1909. [5] McCarrison, *Indian Medical Gazette*, January, 1906, p. 7. [6] Doerr, *Archiv f. Schiffs u. Tropen Hygiene*, Bd. xiii, 1909, p. 697. See also *Journal Royal Army Medical Corps*, February, March, August, and September, 1910.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ACTION AND VITAL REACTION IN NATURE WITH REGARD TO VACCINE-THERAPY.

FOR the cure of disease, if not for the prevention of disease, the results of vaccine-therapy do not as yet seem brilliant. Surely this is not very astonishing when one considers what vaccine-therapy is. For hundreds and thousands of years Nature has been treating her children by a form of inoculation-treatment in all kinds of infections. Nature's treatment, indeed, dates from the commencement of the infectious diseases themselves. At last her method of treatment has been partially discovered, and great honour is indeed due to those who by their efforts discover Nature's secret methods and endeavour to make their discoveries useful to mankind. Nature's auto-inoculation is always going on, and is automatically regulated according to the circumstances of the case. In acute infections, when the amount of auto-inoculation is great, the patient (owing to his weakness) is forced to rest, and so he has to reserve his strength as far as possible, and does not unnecessarily increase the amount of the circulating toxins. In chronic infections and during convalescence Nature encourages a certain amount of exercise and promotes auto-inoculation, whilst we help Nature by providing the patient with pure air, suitable food, etc. By the help of the law of the survival of the fittest this (Nature's) automatic mechanism of vaccine-therapy has during ages been perfecting itself, and though in individual cases Nature's method can doubtless be advantageously regulated or improved on by the skilful modern vaccine-therapist, small wonder is it that the vaccine-therapist's inoculations do

not seem like becoming a panacea for infectious diseases. Probably, in very many cases, Nature's scale of auto-inoculation doses—that is, her automatic adjustment of inoculation—cannot be improved upon. I feel tempted to ask whether some of the apparently brilliant results of the vaccine-therapists are really such triumphs as they at first sight appear to be. Let us take an instance. Every one who has examined many healthy men for life assurance knows how frequently those who have formerly had gonorrhoea pass "threads" in their urine. I think that the presence of such urinary "threads" (free from gonococci) often persists throughout life without causing any inconvenience. I have heard of a man who became miserable in his mind because he had such threads in his urine, and worried his doctor in proportion. At last, I believe, the threads were found to contain staphylococci, and a course of vaccine-therapy led to their complete removal from the urine. Is it not possible that Nature sometimes, like the law, *de minimis non curat*, and that this man's mental condition was really his chief disease? But I do not for a moment mean to deny the possibility of modern vaccine-therapy sometimes achieving real "triumphs."

London, W. F. PARKES WEBER, M.D.

EXTRAUTERINE GESTATION.

My only reason for reporting the following two cases of extrauterine gestation is the extreme rarity of such cases in this country. The first case was that of a Persian lady, aged 24 years, the mother of two children, the youngest aged four years. She was suddenly seized during the night with severe pain in the right iliac region, accompanied with haemorrhage. She awoke her husband, who found her pale and pulseless. Native hakeems were called, who injected morphine freely, and applied ice to the abdomen. These measures greatly relieved the pain. Thinking the pain was due to suppressed menstruation, as she was some fifteen days beyond her period, Jewish women were then called, who used measures to bring about the desired result. The haemorrhage reappeared. The pain continued at intervals, and a lump gradually appeared to the right of the pubes. Exactly six weeks after the first attack of pain I was called to see her. She was then more or less under the influence of morphine; she looked extremely ill, complaining of much pain, describing it as of a bearing down or expulsive character. The tongue was coated, bowels very constipated, with occasional vomiting. The pulse was small, compressible, 84 per minute. There was pain and difficulty on micturition. Temperature 101°. The abdomen was tense, but not distended. She was removed to the hospital on the same day, and kept quietly in bed, the diet and bowels carefully regulated, so that her general condition improved considerably. The following menstrual history was obtained: Since the birth of her last child four years ago the menses were scanty; the two months preceding her present illness the discharge was scarcely noticeable. There was no history of her having passed casts at any time. A blood count showed a leucocytosis of 18,000 white cells per c.cm. Her husband gave the history of a chronic posterior urethritis. A tumour as large as a pigeon's egg could be felt and seen above and to the right of the pubes, which was very painful on pressure. *Per vaginam* the uterus was very sensitive on pressure; the cervix was short; a soft, boggy mass could be felt filling up Douglas's pouch. On June 20th the abdomen was opened. The tumour could plainly be seen in the broad ligament, close to the uterus. There was much blood clot in the pelvic cavity. The tumour was clamped, ligatured, and removed. A great deal of old blood clot was removed from Douglas's pouch. After the operation the patient was treated by saline transfusion and injections of strychnine. She made an excellent recovery, and left the hospital at the end of three weeks.

Fig. 1.—Tumour removed from Case I.

The second case was that of Mrs. T., a European. She had had one confinement some years previously, which was followed by leucorrhoea and menorrhagia. The history of the attack was as follows:

Whilst visiting a neighbour on July 18th, 1909, she was seized with a sharp pain in the abdomen, with haemorrhage. She could scarcely crawl upstairs to her own home. When seen by me she was constantly retching, with colicky pains in the abdomen, fainting, and great prostration, skin moist, pulse small, soft, and rapid. There was no secretion in the breasts. The abdomen was lax, no bulging could be seen, but there was dullness in the lower abdomen, chiefly on the left side. On vaginal examination a tumour could be felt to the left of the uterus in the broad ligament, which was very painful on pressure; a glairy bloody discharge remained on the finger. When seen again, as soon as a truce was declared, I found her condition so serious that, on consultation with Drs. Lindley and Neligan, it was agreed to operate as quickly as possible at her own house, a diagnosis of extrauterine pregnancy being made. The operation was accordingly performed on July 27th. On opening the abdomen there was considerable pelvic peritonitis, the bowels being matted together. There was also much old clot in Douglas's pouch, which was carefully sponged out. The tumour was easily removed with little loss of blood. The patient suffered severe shock, and in spite of every care gradually sank and died in thirty-six hours. An operation could not have been performed under worse circumstances, as the city was in a state of siege when she first fell ill, and the operation was done at the earliest possible moment, but much valuable time had been lost.

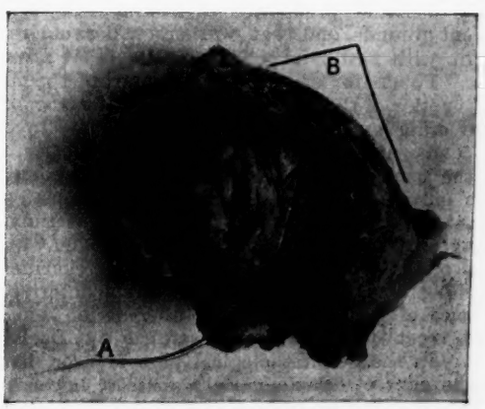

Fig. 2.—Case II. A, Silver wire in Fallopian tube; B, site of rupture.

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THE seventh International Congress of Dermatology will be held in Rome, September 25th to 29th, 1911, under the presidency of Professor Tommaso de Amicis, of Naples, Senator of the Kingdom of Italy. The general secretary is Dr. Gaetano Ciarrocchi, of Rome.

WE are requested to point out that the Jervis Street Hospital is one of those in Dublin which afford special opportunities for obtaining clinical instruction in various branches of medicine and surgery. It has a new out-patient department and separate clinics for gynaecology, ophthalmology, and other specialities. Twelve resident appointments are made annually, four being tenable by qualified practitioners and the rest by senior students. Full particulars can be obtained from Dr. F. Callaghan, honorary secretary to the Medical Board, 38, Westland Row, Dublin.

Reviews.

TROPICAL MEDICINE.

A VERY excellent and accurate account of tropical medicine is to be found in the recently published *Manual of Tropical Medicine*[1] by Drs. CASTELLANI and CHALMERS of Colombo, Ceylon. Necessarily a book dealing in detail with the many diverse subjects which make up tropical medicine of the present day must be a large one, and this is so as regards the volume under discussion, the text, with the index and list of authorities, running to 1242 pages. The plan of the work, which is a good one, is as follows: Part I, introductory, deals with the history of tropical medicine, climate, the effects of tropical climates on man and the incidence of disease in the tropics. Part II is concerned with the causation of disease in the tropics, and consists of a section on physical causes of disease, chemical causes of disease, and thirdly, the biological causes of disease. The latter section deals with the zoology, classification, and description of the protozoan and metazoan parasites concerned in the production of disease in man and the lower animals. Part III has also three sections: A, fevers; B, general diseases; and C, systemic diseases. An index and list of authorities terminates the work. The zoological part of the work is very full and accurate, and is thoroughly up to date both as regards description and nomenclature. The international code of nomenclature laid down by zoologists is strictly followed, and though this changes some of the familiar names of common parasites, yet in the long run it must conduce to clearness, because once the names are finally settled they will remain and be universally used by all. It is to be hoped, however, that systematists will avoid the constant production of new genera, often on insufficient grounds, and that workers will avoid rushing into print with new names for parasites that are really not new. Points for criticism in this part of the manual are the junction of the haemoflagellates and haemosporidia into one order or tribe, the Binucleata. The inversion of the ends of the trypanosomes—for example, talking of the usually accepted anterior end as posterior—this can only lead to confusion, and there is equally good proof that the old nomenclature is as correct as the new—the change of the term "melanin" to "haemozoin," and the question of the nomenclature of the haemogregarines and the classification of the spirochaetes. In the description of the species of sarcocystis, p. 332, no mention is made of the one recently found and described by Darling in Panama. In the helminthological part Manson has not found the eggs of *Schistosomum japonicum* in cases from South Africa (p. 375), and 130 μ as the measurement of the *Microfilaria bancrofti* on page 410 is wrong, such small measurements of this parasite not existing. Apart from these very minor defects, however, the zoological part of the work is excellent, and should prove of the greatest value for reference. The purely medical part of the book, from page 631 to the end, is also well written; the histories of the different diseases are always given shortly and clearly, and all that it is necessary for one to know on the symptomatology, diagnosis, treatment, and otherwise will be found to follow. One of the chief points that strikes attention here is the very full and able manner in which the diseases of the skin are treated. Seven chapters are devoted to dermatology, and there is no other work on tropical medicine that approaches to such fullness as the present on this special subject. One would like to write further praising other points in the book, together with the index and list of authors—the latter will be found specially useful—but space will not permit. The enormous amount of work the authors must have done to produce such a work as the present will be fully appreciated by all who know the subject, and the same body of people will at once realize the value of the work, and will also see that the manual is one that will take a high place amongst the works on tropical medicine, first as a textbook and perhaps more especially as a book of reference. Drs. Castellani and Chalmers are to be heartily congratulated on the value of their first-class contribution to tropical medicine.

[1] *Manual of Tropical Medicine.* By Aldo Castellani, M.D. Florence; Privat-Docent (Naples) Director of the Clinic for Tropical Diseases, Ceylon; Physician, Seamen's Ward, General Hospital, Colombo; Professor of Tropical Medicine and Lecturer on Dermatology, Ceylon Medical College; and Albert J. Chalmers, M.D. Vic. and Liv., F.R.C.S. Eng., D.P.H. Camb., Registrar and Lecturer on Pathology and Animal Parasitology, Ceylon Medical College; Pathologist, General Hospital, Colombo. *University Series.* London: Baillière, Tindall, and Cox. 1910. (Demy 8vo, pp. 1272; illustrations 373, and coloured plates; 21s.)

The *Annals of Tropical Medicine and Parasitology* for June and July, 1910,[2] contain many extremely interesting papers. That for June is devoted to the Amazon Yellow Fever Expedition, an expedition which was successfully carried out by Dr. Wolferstan Thomas. The latter had the good fortune to find a second case of oesophagostomiasis in man, this exceedingly rare condition only having been once recorded before—namely, by Dr. Brumpt in 1905, in a negro from the Omo River, near Lake Rudolph, in East Africa. Professor Railliet and his assistant, Mr. Henry, describe the zoological features of the parasite, and name it the *Oesophagostoma stephanostoma var. thomasi.* There is no doubt that systematic *post-mortem* examinations in the tropics by experts would reveal many treasures that for ages have been missed, and it will be interesting to note if other cases of this rare condition will be found by Dr. Thomas when he returns to Manáos. Other papers of interest by the same author are entitled, "The Sanitary Conditions and Diseases prevailing in Manáos, North Brazil, 1905 and 1909," and "Yellow Fever." In the July number amongst other papers are ones on Parasitic Granuloma, by A. R. Ferguson and Owen Richards; Factors in the Transmission and Prevention of Malaria in the Panama Canal Zone, by S. T. Darling; Preliminary Experiments on the Effects of Cold on Various Diseases in Small Animals, by Professor Ross and C. L. Williams; On the Occurrence of Schizogony in an Avian Leucocytozoon, *L. lovati*, Parasitic in the Red Grouse, *Lagopus scoticus*, by H. B. Fantham; and A Case of Sleeping Sickness Studied by Precise Enumerative Methods, by Professor Ross and David Thomson. Though clinically the granulomata described by Ferguson and Richards in no way resembled oriental sores, yet in several of them parasites identical with the *Leishmania tropica* were found. This is an interesting observation and one worth following out in other ulcerative conditions. Professor Ross hopes by his new method of precisely enumerating parasites to make the study of cases of malaria, trypanosomiasis, and other diseases more accurate. It also enables one to detect parasites when they are in numbers so small that their detection by the ordinary methods would be exceedingly laborious. The method in the future should prove of value in the class of cases mentioned. Darling's paper gives a good account of the different *Anophelines* inhabiting the canal zone on the Isthmus of Panama, and also accounts of interesting biting and infection experiments.

[2] *Annals of Tropical Medicine and Parasitology*, June 1st, 1910. Series T.M., vol. iv, No. 1. July 25th, 1910, Series T.M., vol. iv, No. 2. Issued by the Liverpool School of Tropical Medicine. Liverpool: At the University Press. London: Constable and Co., Limited, 10, Orange Street, Leicester Square, W.C. (10s. 6d. net.)

PROPHYLAXIS OF MALARIA.

THE prophylaxis of malaria in India would seem to be rather a vexed question at present, therefore it is opportune that a book bearing this title[3] by Lieutenant-Colonel P. HEHIR, I.M.S., should appear at this moment. The author deals with the subject in a very comprehensive manner and goes into the subject much more deeply than the title of his work would suggest. For example, there is a part on epidemiology, a part on pathology, and the third part deals with the prophylaxis, this requiring over 100 pages for its description. We may confine our remarks to this part, but this does not, however, mean that the first part of the work is not worth notice. As a matter of fact

[3] *Prophylaxis of Malaria in India.* By Lieutenant-Colonel P. Hehir, I.M.S., M.D., F.R.C.P., F.R.C.S., and F.R.S.E., D.P.H. Camb., D.T.M. Liv. Univ., late Specialist in "Fevers," Northern Command; Medical Officer, 2nd Battalion 8th Gurkha Rifles, Lansdowne; Author of "Prevention of Disease and Inefficiency in Indian Frontier Warfare." Printed at the Pioneer Press, Allahabad. 1910.

it is excellent and gives a very good idea of that branch of the subject. Colonel Hehir begins his remarks on prophylaxis by giving a table of the methods commonly used. These need not be described here again as they are well known to all. After this each individual method is discussed in detail and so fully that there is little, if anything, to criticize adversely about them. On page 257 the author states that the advantages to be got by antimosquito measures in rural districts are comparatively limited, and he believes that mosquito reduction is specially for cities and towns being only applicable in a limited sense for villages. Though agreeing with this in some ways, yet one would rather treat every place, village or otherwise, strictly on its own merits, and when this is done it may be found that much good can be accomplished. In such a vast place as India there must necessarily be hundreds or thousands of different conditions requiring investigation, and until different areas are mapped out and studied no one can possibly tell what can or what cannot be done. The sanitary officer must join forces with the mosquito expert, medical or otherwise, if the best use is to be made of the money available, and after all is said and done the latter commodity must be present and in abundance before anything great can be accomplished. If the statement on p. 259 that "One has repeatedly heard the view of the dissemination of malaria through *Anophelines* ridiculed by intelligent officials of Government in various departments" is true, then it indicates a deplorable state of affairs in India, and one which the Government should take immediate and drastic steps to prevent in the future. Undoubtedly such general ignorance keeps back scientific progress, and the possessors of it can surely not be termed intelligent. As Colonel Hehir says, "No system of prophylaxis covers all places," and that is the crux of the whole situation. Colonel Hehir is to be congratulated on the fair way in which he puts the whole question of this somewhat difficult subject, and one sincerely hopes that his work will be well read in India and will do good in helping the onward march against malaria.

TROPICAL FEVERS.

Fevers in the Tropics, the well-known work by LEONARD ROGERS, Professor of Pathology in the Medical College, Calcutta, has now reached its second edition.[4] In the author's preface to this edition he explains how the work of revision is very difficult when one has official duties to perform, and is in a far distant tropical country. In this one thoroughly sympathises with him, and at the same time congratulates him on the results of his efforts. Only those who have tried to write in some far distant country, away from libraries, recent literature, fresh periodicals, and books, knows how heartless a task this is. Under the circumstances it has seemed best to him to leave the first part of the book—the first edition—alone, adding to this an addendum containing an account of the most important progress made during the last two years with regard to fevers in the tropics. The first part of the present edition up to p. 334, therefore, stands as before, and has already been reviewed; the present remarks apply to the addendum. As regards kala-azar, one agrees with the author when he states that "the infrequency with which he (Patton) obtained developmental forms of the Leishman-Donovan bodies in bed bugs, fed on cases of kala-azar, showing numerous parasites in their peripheral blood, is remarkable, and leaves some doubt as to whether this is the common and only source of infection." On the other hand, in fairness to this idea, he (Rogers) states that measures directed against bugs seem to have undoubtedly reduced the number of cases. The chapter on sleeping sickness deals chiefly with *Glossina palpalis*, the development of the trypanosomes in it, and with its destruction; this information being chiefly derived from the bulletins of the Sleeping Sickness Bureau. The most important parts of the addendum are, of course, the chapters entitled "Further Experience of the Ipecacuanha Treatment of Amoebic Hepatitis in Preventing Tropical Liver Abscess" and "Amoebic Suppurative Hepatitis or Tropical Liver Abscess." In one's own mind there is not the slightest doubt that the recommendation, made by Rogers, of using large doses of ipecacuanha in the treatment of the presuppurative stages of liver abscess, and now even in what one considers to be the beginning of suppuration, and in the after-treatment of the condition when the pus is let out, is a sound one, and no one who gives it a fair trial will have cause to rue its employment. One cannot read the accounts of some of his cases without being very much struck with the effects of the treatment, and certainly, even in England, many tropical cases of obscure liver troubles with pyrexia clear up under this ipecacuanha dosage in a marvellous fashion. The chapter on tropical liver abscess is specially good, as the author has had the good fortune not only of seeing so many cases but also of having access to the voluminous Calcutta records. As to whether surgeons will support his trocar method of evacuating abscesses by aspiration alone is doubtful, and his own brother officers have criticized it pretty severely already. Be that as it may, the injection of the quinine solution into the abscess cavity advocated by him would seem to be sound, and would also seem to shorten the suppuration considerably, and there does not, therefore, seem to be any definite reason why it should not be adopted. The observations on epidemic dropsy would seem to isolate this disease once and for all from beri-beri, though as rice seems to play a part in its production it may be allied to it. The appendix, full as it is of the latest information, should add to the value of the first part of the work, which, if one can judge by the fact of a second edition being required, would seem to have enjoyed considerable popularity.

[4] Oxford Medical Publications. *Fevers in the Tropics: Their Clinical and Microscopical Differentiation, Including the Milroy Lectures on Kala-Azar.* By Leonard Rogers, M.D., F.R.C.P., F.R.C.S., B.S., I.M.S., Professor of Pathology, Medical College, Calcutta; Fellow of the Calcutta University; Honorary Member of the United States Society of Tropical Diseases, and of the Philippines Medical Society. Second edition. London: Henry Frowde, and Hodder and Stoughton. 1910. (Cr. 4to, pp. 444; 8 figures; 83 charts; 11 plates. 21s.)

THE CULICIDAE.

A Monograph of the Culicidae of the World,[5] vol. v, by F. V. THEOBALD, will make the student of tropical medicine or entomology pause and wonder if there is to be any finality at all in this interesting branch of science. Since vol. iv was published twenty-one new genera and 392 new species have been described, and as the first two volumes have been out of print for some time it has been found necessary in the present volume to make mention at least of all the species described in any of its predecessors. Thus the present volume is not a mere supplement, for, containing tables for the determination of genera and species as well, it really becomes a work by itself, and one that should materially facilitate the use of the earlier volumes. Growth in the classification of the Culicidae since Theobald introduced his method of scale structures as an aid, has been phenomenal. Barely twelve years ago there were about six genera of mosquitos; now the subfamily Culicina alone contains eighty-three genera, and the number of species is legion. It will manifestly be seen that a thorough knowledge of all the different families, subfamilies, and genera of mosquitos is practically impossible for the ordinary medical man, and the subject, as a whole, has passed into the hands of entomological specialists, or, to be more accurate, into the hands of specialists on the Culicidae alone. There are signs even that an entire unanimity does not exist between the Culicidae specialists themselves, and lately a school has arisen that has thrown doubts on the scale method of classification first described and perfected by Mr. Theobald. Though the scale method of classification may not be perfect, yet it has certainly answered better than any other method invented, and such being the case should be retained. It is too much to expect complete harmony amongst scientific workers on any given subject, but if the habit of multiplying genera and species of mosquitos is to continue without attempting to see if these have been described before, then, as far as the medical man goes at

[5] *A Monograph of the Culicidae, or Mosquitos, Mainly Compiled from Collections received at the British Museum.* By Fred. V. Theobald, M.A. Vol. v. London: Printed by order of the Trustees. Sold by Longmans and Co.; B. Quaritch; Dulau and Co.; and at the British Museum (Natural History). 1910. (Demy 8vo, pp. 460. 25s.)

least, a revulsion of feeling will take place, and a reversion to the simpler classifications of previous days will have to be made. After all, only a very small percentage of mosquitos cause disease, and it will be sufficient for students of tropical medicine to have a good sound working knowledge of these alone. If others eventually are incriminated then they will have to be properly classified and entered on the lists required by medical men. Outside of the medical profession there is really little, if any, interest taken in this special branch of entomology. As regards points of special interest in the book, one notes that Mr. Theobald retains the name *Stegomyia fasciata*, and holds that this antedates Meigen's *calopus*, a term which has recently replaced *fasciata*, chiefly in America. A number of the old Taeniorhynchus species are placed in a newly formed genus, the *Chrysoconops;* and others of the old genus Culex are split up and placed in further new genera. The book is got up like the former volumes, is well illustrated, and contains a very good series of photographs of wing scales. It remains, without doubt, the standard book on mosquitos of the present time.

SLEEPING SICKNESS.

DR. HODGES, Principal Medical Officer of Health of Uganda, in discussing the question of treatment of sleeping sickness in his *Progress Report on the Uganda Sleeping Sickness Camps from December, 1906, to November, 1909*, concludes: (1) That the prospect of curing sleeping sickness by medicinal treatment has not materially increased; (2) that the percentage of apparent cures is, on the whole, very small, and practically negligible from the point of view of stamping out the disease or safeguarding the population; (3) that the percentage of apparent cures continues to diminish with lapse of time after treatment, while the death-rate continues to increase; (4) that though the percentage of improvement is slightly higher for some methods of treatment than for others, the percentages are so small as to render such differences of no great importance; (5) that the conclusions drawn in the report for 1908 have been borne out by the further experience gained since that time. These conclusions bear out the opinions of most of the speakers on the discussion on trypanosomiasis at the recent meeting of the British Medical Association held in London. The fact is, there is no specific drug for human trypanosomiasis, and the discovery of one is still a thing to be devoutly hoped for. Ehrlich's newest drug, technically known as "606," may prove to be this.

There is a wealth of material in No. X *Reports of the Sleeping Sickness Commission of the Royal Society*,[6] recently published. It deals principally with trypanosomiasis, and should be consulted in the original by all who are specially interested in this subject. Most of the papers are by Colonel Sir David Bruce, together with Captains Hamerton, Bateman, and Mackie, members of the Commission, but other workers also contribute. Professor Minchin, for example, writes a report on a series of blood parasites collected by the Commission; Mr. Plimmer, with others, writes on treatment; and Professor Cushny and Dr. Thomson also take up the latter subject. As regards treatment, there does not seem to be any definite progress to record, but it is only by careful experimental work such as is being done that success can be looked for in the future. From the point of view of prophylaxis of sleeping sickness in Uganda, the important fact found out by the Commission, that the *Glossinae* are still infective along the lake shore, is all-important. The flies have apparently retained their infectivity for a period of at least two years, and, as the authors put it, "how much longer they will remain infective it is impossible to say, but it is obvious that experiments should be continued in order to answer this important question." The native population can certainly not be allowed back to the shores of the Nyanza till the flies are no longer infective, and if some animal eventually be proved to be acting as a reservoir, then this may be never. The fact that *Glossina palpalis* may act as a carrier of animal trypanosomes, as well as those of man, complicates matters somewhat, and the impression one gains from reading this most recent work on trypanosomiasis is that the subject, instead of being finished, is only in its infancy. Many problems are still waiting solution. The illustrations and plates in the report are excellent, and Lady Bruce must be specially congratulated on the part she has played in preparing some of these. The report as a whole is a valuable contribution to the study of trypanosomiasis.

[6] *Reports of the Sleeping Sickness Commission of the Royal Society.* No. X. London: Printed by His Majesty's Stationery Office, by Darling and Son, Ltd., 34-40, Bacon Street, E. And to be purchased, either directly or through any bookseller, from Wyman and Sons, Ltd., Fetter Lane, E.C.; or Oliver and Boyd, Tweedale Court, Edinburgh; or E. Ponsonby, 116, Grafton Street, Dublin. 1910. (3s.)

DISEASES OF THE SKIN.

THE eighth edition of the treatise on *Diseases of the Skin*,[7] by Dr. NEVINS HYDE, of Chicago, has just been issued. This new revised edition has been delayed on account of the untimely death of Dr. Frank Montgomery, long associated with the author in his task. Dr. Hyde has been assisted by Dr. Oliver Ormsby, of Chicago, in preparing the present edition, which reflects great credit on all concerned. We have already recorded our high appreciation of this treatise in previous notices. Among other points of interest in the present edition, the unpleasant results of the paraffin treatment of deformities to remove wrinkles, form dimples, and otherwise change the contour of the face, are insisted on. The author adds that the deformity resulting from the treatment is intense in some cases, and causes the patient much suffering and remorse. The remarks on acute lupus erythematosus might certainly be amplified. The chapter on pellagra contains many references to recent American investigations on the subject, the disease having only of recent years been recognized as existing in the United States. Although the damaged maize intoxication theory has been doubted and renewed researches in other directions are now in train, Dr. Hyde remarks that "the origin of some of the American cases has been distinctly traced to the consumption of maize producing a toxine after its storage." This treatise on diseases of the skin can be recommended, and as a work of reference for dermatologists the book is indispensable.

Dr. STELWAGON, of Philadelphia, whose large book on diseases of the skin is well known, has recently brought out a seventh edition[8] of his *Essentials*. This little volume belongs to Lumsden Question Compends. There is obviously a demand for this kind of book. It is not unusual to see students going about with short cuts to the knowledge of particular subjects, on the "wisdom while you wait" principle. This is mentally a disintegrating method, encouraged by a written system of examination leading to much cramming. It has been said concerning examinations that fools ask questions which wise men cannot answer, and there is some truth in the dictum. Let us hope that in the future the mere bookworm in medicine will be as extinct as the dodo. These compends fill, no doubt, a long-felt want. From such an author as Dr. Stelwagon it is very good of its kind, of course. That could not be otherwise. But we prefer to think of him as the writer of an excellent treatise on diseases of the skin.

SYPHILIS INSONTIUM.

FOLLOWING in the footsteps of Dr. Bulkley of New York, Dr. OSKAR SCHEUER of Vienna has written a book entitled *Syphilis Insontium*.[9] This title is a very bad one, quite apart from the question of innocence, for it implies a syphilis of the guilty, thus introducing the idea of sin, which is quite outside the province of medicine.

[7] *A Practical Treatise on Diseases of the Skin, for Students and Practitioners.* By James Nevins Hyde, A.M., M.D. Eighth revised edition. London: Baillière, Tindall, and Cox. 1910. (Roy. 8vo, pp. 1126; 223 engravings and 58 plates. 25s.)

[8] *Essentials of Diseases of the Skin, including Syphilodermata; arranged in the form of Questions and Answers for Students of Medicine.* By Henry W. Stelwagon, M.D., Ph.D. Seventh edition, illustrated, Philadelphia and London: W. B. Saunders Company. 1909. (Cr. 8vo, pp. 291 4s.)

[9] *Die Syphilis der Unschuldigen (Syphilis Insontium).* Von Dr. Oskar Scheuer. Vienna and Berlin: Urban und Schwarzenburg. 1910. Sup. roy. 8vo, pp. 247. M.9.)

Moreover, in this particular instance, when we find the author solemnly describing "Schanker am Anus durch Päderastie," in the case of far from innocent actors, under the title of *Syphilis der Unschuldigen*, the situation becomes almost comic. As the book resolves itself into a survey of extragenital infection in syphilis, why not call it by that name? The subject of extragenital infection is of the very highest importance, and in Dr. Scheuer's volume are recorded a number of cases of this class. The medical man is apt to miss the nature of extragenital chancres, whereas syphilis is a disease he should always be on the look-out for. The author opens with a quotation of John Stuart Mill that you can no more cure and prevent the diseases of society than those of the body if you do not talk about them. Now, there is no doubt that syphilis is not sufficiently talked about with us; indeed, in our medical schools methodical teaching of the subject does not exist. Dr. Scheuer has brought together a large selection of cases, but they are only a selection, as syphilographers do not publish details of all the cases of extragenital lues coming under their notice. Among the writers on the subject the Russians stand out prominently, for it is well known how frequent extragenital syphilis is in that country. Dr. Scheuer insists on the sexual perversity of Paris. This is strange for a man practising in Vienna. All great cities are much the same in this respect, simply because man is man everywhere, and liable from the nature of things to the same sexual aberrations. Dr. Scheuer's book is well worth perusing. There is a good bibliography, but unfortunately no index.

NOTES ON BOOKS.

STRONG AND TEAGUE have recently[10] had encouraging results in the treatment of surra in the Philippines by the use of arseno-phenyl glycin, a drug first brought forward by Professor Ehrlich. They used the drug in two different ways: (1) By stages in which relatively small doses are given and at repeated intervals; (2) by one or several large doses. The second method proved much the most efficacious in monkeys and horses; but unfortunately as regards the latter the margin between the dose necessary to effect a complete cure and the fatal one was so small that death from the drug often occurred. Yet the authors do not hesitate to say that arseno-phenyl glycin has proved to be by far the most satisfactory means of treatment of trypanosomiasis (surra) yet discovered. The drug in their hands has shown itself to be very efficacious for the treatment and cure of surra infection in monkeys, and, though the results in horses are not so good, yet they are the best that have as yet been obtained. They state that they have for the first time been able to cure horses afflicted with this parasite, a thing they were never able to accomplish before with the drugs at their disposal. Though a certain success may be expected, then, in an epidemic, one can never predict with certainty whether in a given instance the horse will be cured or succumb first to the action of the drug; but, as the disease is invariably fatal to these animals without treatment, a trial of the drug should be made in the case of any horse of value. In an epidemic at a place called Alabang a sufficient percentage of horses was saved to demonstrate that the treatment is of some practical value. It does not, of course, follow that this drug may be of any special value in human trypanosomiasis, or in many of the different animal strains of trypanosomes found in Africa; but still any drug which gives the slightest hope should be persevered in and given an extended trial.

The Death-Dealing Insects and Their Story,[11] by C. CONYERS MORRELL, gives a very useful synopsis of the part some insects play in the transmission of tropical diseases. Intended for the laity, it is written in a plain and easy style, with technicalities and scientific terms kept in abeyance as much as possible. It should give any one who reads it carefully a very good general idea of the subject, and then this may be followed up by references to advanced works. The education of the laity in the tropics on subjects such as sanitation and insect prophylaxis is a very important one, and without doubt the best way that this may be attained is by the issue of pamphlets and easily-read booklets such as the above. This book, or similar ones, should be made compulsory in all schools in the tropics.

[10] *The Treatment of Trypanosomiasis, with Especial Reference to Surra.* By Richard P. Strong and Oscar Teague (from the Biological Laboratory, Bureau of Science, Manila, P.I.). *The Philippine Journal of Science*, vol. v, No. 1, February, 1910.

[11] *The Death-Dealing Insects and Their Story.* By C. Conyers Morrell. Manchester: H. A. W. Offices. 1910. (Cr. 8vo, pp. 87. 1s.)

Nova et Vetera.

MODERN FAITH HEALERS.

COUNT CAGLIOSTRO.

HISTORY affords many instances of the curious fact that when faith in established religion decays superstition flourishes most rankly even among those who have rejected the old beliefs. The break up of the old Roman religion was followed by widespread belief in sorcery, magic and the most extravagant quackery. The same thing occurred before the outbreak of the French Revolution when faith in Christianity had been sapped by the Encyclopaedists; and again in our own day, when rational religion is more and more replaced by fantastic forms of superstition which appeal not only to the half-educated but to many who with much superficial "culture" are lacking in the critical faculty and in the homely quality of common sense.

One of the most striking examples of the success of imposture which seems to us now so transparent that only the most ignorant could have been taken in by it, is afforded by the career of the famous quack who called himself Cagliostro. He made his appearance on the stage of quackery at a most opportune time. As Carlyle says:

> It was the very age of impostors, cut-purses, swindlers, double-goers, enthusiasts, ambiguous persons; quacks simple, quacks compound; crackbrained, or with deceit prepense; quacks and quackeries of all colours and kinds. How many Mesmerists, Magicians, Cabalists, Swedenborgians, Illuminati, Crucified Nuns, and Devils of Loudun! To which the Inquisition-Biographer adds Vampires, Sylphs, Rosicrucians, Freemasons, and an *Etcetera*. Consider your Schröpfers, Cagliostros, Casanovas, Saint Germains, Dr. Grahams; the Chevalier d'Eon, Psalmanazar, Abbé Paris, and the ghost of Cock Lane! As if Bedlam had broken loose; as if, rather, in that "spiritual Twelfth-hour of the night," the everlasting Pit had opened itself, and from *its* still blacker bosom had issued Madness and all manner of shapeless Misbirths, to masquerade and chatter there.

To us now the man appears simply as a quack of the most obvious kind; yet there must have been some curious fascination in him, for, to say nothing of the vast crowds of believers whom he found in nearly every town in Europe, he attracted the attention of men like Mirabeau and Lavater; he was made the hero of plays by Schiller and Goethe, and the subject of an elaborate study by Carlyle. The story of his career would seem absolutely incredible but for the fact that man is by the constitution of his mind a lover of signs and wonders, and therefore is generally ready to meet an impostor half way. The secret of Cagliostro's influence is to be found in that mysterious and yet tremendous force which, for want of a better name, we call Suggestion. People believed in him in direct proportion to the preposterous nature of his claims. He also contrived to throw about himself the cloak of mystery—always in itself an attraction to the credulous. Like all quacks, he professed contempt for rational medicine; this is a pretension that never fails to impress the ignorant and those whom Warburton calls the "better vulgar." Most people are incapable of appreciating the aims of science and cannot weigh evidence; they are therefore easily led astray by any false prophet who vaunts his independence of ordinary methods of cure and his possession of mystic lore. This attitude towards science, which progresses by slow and laborious steps cannot be changed by Act of Parliament; the darkness of ignorance and superstition can be dissipated only by the slow dawn of truth. Belief in quackery will never die till an intellectual atmosphere has been created in which it cannot live.

As Cagliostro was in some respects the most remarkable of all quacks—the "quack of quacks" Carlyle called him—an account of his career may not be without interest. His real name was Joseph Balsamo, and he was born at Palermo, of parents in a humble position, on June 18th,

1743. He was an idle boy, who gave much trouble to those who had charge of him. Having been placed in a seminary he more than once ran away. About the age of 13, through the influence of an uncle, he was admitted to a religious brotherhood at Cartegirone. There he was put under the infirmarian, and thus had the free run of the dispensary. There he learnt a smattering of chemistry and medicine, and the scraps of knowledge thus gained formed his medical stock-in-trade for life. There, too, he may have learnt the rudiments of alchemy, of which he was afterwards to make much use. He did not take kindly to the discipline under which he lived, and in consequence was often punished. Young as he was he seems to have picked up a good deal of knowledge of what is called "life" from the streets of Palermo, and he could use this in an impish way, which shows that he was not without a certain sense of humour. When made to read the Martyrology while the brethren were at meals, he substituted for the names of the saints therein commemorated the names of the most notorious prostitutes of Palermo Whether this was the culminating offence or not we do not know, but he was returned on the hands of his uncle at Palermo. He next tried painting. He had no real artistic capacity, but a considerable power of imitation which extended to handwriting as well as painting. This talent naturally led to forgery, in which he became very proficient. Meanwhile, he was leading a dissolute life, and, like Autolycus, picking up unconsidered trifles of jewellery and other valuables which came in his way. The exploit which finally made Palermo too hot to hold him was a swindle perpetrated on a goldsmith to whom he pretended to reveal a place where treasure was hidden. Money of course had to be advanced for the mystic process required for its recovery, and he extracted some £30 from his dupe, luring him on by the usual rites of sorcery, magic circles, and the bursting forth of phosphorus flames. When the goldsmith pressed for something more solid he was beaten black and blue by a number of the swindler's accomplices. After this affair Cagliostro found it convenient to leave his native place in order to escape the stiletto of the man whom he had defrauded.

For some time his subsequent course was like that of certain rivers which run for a part of their course underground. He is said to have visited Greece, Rhodes, Malta, Egypt, Arabia, Persia, and to have associated himself with a certain Althotas, whom he afterwards described as the Prince of Trebizond. He relates that he worked with Althotas in the laboratory at Malta, and discovered the secret of making silk out of hemp. Althotas disappears from view at Malta, where Cagliostro still, according to his own account, was graciously received by the Grand Master, who gave him letters of recommendation to persons of influence at Naples. All the evidence about this part of Cagliostro's life is found on investigation to rest on his own statements. Whatever truth there may be in them it may be conjectured, without want of charity, that, wherever he may have been, he was qualifying for the highest degrees in rascality. After a time he comes to the surface in Rome, where he tried to make a living by the sale of imitation pen-and-ink drawings. These works of art brought him little money, but he found in Rome what was to prove one of his chief sources of wealth. This was a girl, by name Lorenza Feliciani, whom he married. Lorenza was very handsome, and Cagliostro saw in her charms an easy way to fortune. With her he made pilgrimages to various places where he found plenty of wealthy patrons willing to pay for the privilege of worshipping at her shrine.

We get a glimpse of the worthy pair in the *Mémoires* of Casanova, a work to which Carlyle could not gain access because "most British librarians make a point of denying that they possess" it. It is indeed a book which whoso looks into, even in the way of research, should bathe afterwards in running water and be unclean till even. It may be interesting to quote Casanova's account of Cagliostro as he saw him before the days of his fame. Dining every day at the *table d'hôte* at Aix in Provence, Casanova heard one day of two pilgrims, a man and a woman, who had just arrived. He says:

> They were Italians, had come on foot from St. James of Compostella, in Galicia, and seemed to be persons of position, as on their arrival in the town they distributed large alms. It was said that the female pilgrim was charming, about 18 years of age, and that being very tired she had gone to bed on arriving. They were lodged in the same inn, and we all became very curious about them. As an Italian I had to put myself at the head of a number of people who wished to pay them a visit. I judged them to be either devout fanatics or rogues. We found the lady pilgrim seated on an armchair, having the appearance of a person worn out with fatigue and interesting on account of her youth, her beauty, which was enhanced by an air of sadness, and on account of her crucifix of yellow metal six inches long which she held in her hands. On our entrance she laid down the crucifix and rose to give us a gracious welcome. The pilgrim, who was arranging shells on his weeds of black waxed cloth, did not move. But looking towards his wife seemed to say that we should occupy ourselves with her. He seemed about 24 or 25, short, well enough made, and had on his face, which was sufficiently pleasing, an expression in which were mingled effrontery, cynicism and roguery. He was altogether the opposite of his wife, who posed as an example of the dignity, modesty, simplicity, sweetness, and timidity which gives so much charm to a young woman. These two persons who could barely make themselves understood in French seemed relieved when I spoke to them in Italian. She told me she was a Roman, and she need not have said so, as her beautiful accent was a proof of the fact. As regards him, I judged him to be a Neopolitan or a Sicilian. In his passport, which was dated Rome, his name was given as Balsamo. She was called Serafina Feliciani, names which she has not changed. As regards the man, in ten years we shall find him under the name of Cagliostro. "We go back to Rome," she said to me, "very glad to have made our devotions to St. James of Compostella, and to Our Lady del Pilar. We have always gone on foot living on alms, the better to obtain the mercy of God whom I have so much offended in my life. I ask only a halfpenny in the way of charity, but have always been given silver and even gold, so that on arriving in each town we have had to distribute to the poor all that remained to us, so as not to commit the sin of want of confidence in eternal providence. My husband being strong, has not suffered much, but as for me I have endured the greatest sufferings in making so long a voyage on foot, sleeping on straw, or on bad beds, and never putting off my clothes in order not to contract diseases which it would be difficult for me afterwards to get rid of."
>
> I judged it probable enough that she told us this last circumstance only to awaken in us the desire to see the cleanness of her skin elsewhere than on her arms and hands, of which, in the meantime, she allowed us to see, gratis, the perfect whiteness and cleanliness.
>
> "Do you intend to make any stay here, Madame?"
>
> "The fatigue from which I suffer will compel us to pass three days in this town, whence we shall go to Rome, passing through Turin, where we will pay our devotions to the Holy Shroud."
>
> "You know doubtless that there are several of these in Europe?"
>
> "We have been told so, but we have been assured that the true one is that of Turin. It is that of which St. Veronica made use to wipe the face of our Redeemer who imprinted thereon his divine image."
>
> We left quite satisfied with her, but did not much believe in her devotion. As for me, still weak from illness, I made no attempt upon her virtue. But all those with me would have willingly supped with her if they had had the chance. The next day the husband of the fair Roman came to ask me to go up to breakfast with them, offering if I preferred it, that they should come down to me. It would have been rude to refuse; I therefore said to him that they would give me pleasure if they came down. During the breakfast I asked the Pilgrim as to his profession, and he told me that he drew with the pen in the style called chiar-oscuro. His skill consisted in copying a print, not in inventing.
>
> But he assured me that he excelled in his art and could copy a print so exactly that the copy could not be distinguished from the original.
>
> "I congratulate you, that is a talent with which if you are not rich, you are sure to earn your bread wherever you care to put yourself."
>
> "Everybody says the same, but it is wrong, because with my talent one starves. In pursuing this trade in Rome or Naples, I work all day to earn half a *testone* [a small silver coin worth thirty *soldi*] not enough to live on."
>
> After this discourse he showed me some fans which he had made, than which nothing could be finer. They were done with the pen, and could not be surpassed by the most perfect engraving. To convince me finally he showed me a Rembrandt of his doing, which was, if possible, finer than the original. Nevertheless, he swore to me that his talent did not enable him to live. This, however, I did not believe. He was one of those idle genuises who prefer a vagabond existence to a life of work.
>
> I offered him a louis for one of his fans, but he refused the money, begging me to accept it for nothing, and to carry round the hat for him at table, as he wished to start the next day but one. I accepted his gift and promised to do as he wished, and I got for him a couple of hundred francs, which the lady came to the table where we were still seated to receive. This young woman, far from advertising vice, had the demeanour of virtue. Invited to write her name on a lottery ticket, she excused herself, saying that in Rome girls whom it was intended to bring up in the path of virtue were not taught to write. Everybody laughed at this excuse except myself, who, having pity on her, did not wish to see her humiliated; but I was then sure that she belonged to the lowest class of

the people. The next day she came to my room to ask for a letter of introduction for Avignon; I wrote two for her at once—one for Audifret the banker, the other for the innkeeper of St. Omer. In the evening she gave me back the one addressed to M. Audifret, saying that her husband had told her that it was not required. At the same time she asked me to examine it to see if it was really the letter I had given her. Having looked at it closely, I said it was certainly my letter. She told me, laughing, that I was wrong, as it was only a copy.

"Impossible," said I.

She called her husband, who brought my real letter in his hand. Being no longer able to doubt, I said to him:

"Your talent is admirable, for this is much more difficult to imitate than an engraving. With it you may go far, and gain great advantage from your ability, but if you don't take care it may cost you your life."

The couple left the next day. In ten years I shall relate where and how I saw this man again under the name of Count Pellegrini, with the good Serafina his wife and tool.

At the moment I write this he is in prison, from which probably he will not come out, and his wife is happy—perhaps—in a convent.

The picture of the prince of liars and swindlers taking round the hat on behalf of the prince of quacks is curious if not edifying. The date of this account would seem to be 1768 or thereabouts. Casanova's Memoirs break off abruptly in 1774, or we should doubtless have had some of the details of Cagliostro's later career which he promises. It is interesting to note the ease and certainty with which one rogue saw through the other.

Balsamo took many titles of his own invention, but the name "Cagliostro" by which he is best known is that of a grand-uncle. He embellished it with the profix of Count. He travelled through Europe seeking for gulls, his wife riding inside with the adorer of the moment, her husband leaving her an open market for her wares by sitting outside. Among his pilgrimages was one to Saint Germain, then living in Westphalia, and it is probable that from that famous quack he got some hints on the transmutation of metals and cabalistic mysteries.

It was not long before he started as a quack on his own account. He used the little knowledge of drugs he had gained in the dispensary of the Monastery at Palermo, making much use of the "extract of Saturn"; this extract of lead was the basis of Goulard's preparations. He gave it in such large doses that many of his patients got lead colic in consequence. He also made a large use of aromatics.

As the charms of his "Countess" began to lose their stimulating effect he concocted love philtres for both sexes. Among these was the "Wine of Egypt," the chief ingredient being cantharides; it was sold for a great price. He had a beautifying water by means of which he professed to remove wrinkles from the faces of elderly ladies. There were also charms of various kinds, and magical apparatus, blue flames, and divining rods. It is a testimony, perhaps, to our national good sense that, notwithstanding this comprehensive outfit, his trade does not seem to have prospered in England. He tried every art of swindling besides quackery, but the English lawyers were too much for him, and to escape their clutches he was fain to quit our shores.

One thing, however, which was to prove very profitable to him elsewhere he found in England. He got not only himself but his wife admitted Freemasons. Cagliostro seems to have seen what possibilities lay in the invention of a new rite. Inspired by one George Cofton with the notion of Egyptian masonry, Cagliostro proceeded to develop it into a new gospel by which adepts were to be regenerated physically and morally and made perfect. By means of it they were to find the philosopher's stone, and also a "Pentagon of Rejuvenescence" which would restore man to his primitive state of innocence. Of this renovated craft Cagliostro proclaimed himself the Grand Cophta, who was to be worshipped with all manner of curious rites. He had authority over the angels and everything was done in virtue of the power which he derived immediately from God. We now have the small swindler of Palermo full blown into the high priest of a new cult with powers as large as those claimed by Mrs. Eddy.

Freemasonry enabled Cagliostro to gain a footing in most of the towns which he visited. He delivered addresses, enrolled adepts, and no doubt flourished exceedingly for a time at their expense. One wonders how he imposed on so many, for he had not even the flow of speech which goes to the making of the stump orator. He spoke in a jargon composed of Sicilian Italian mingled with fragments of other languages and tongues of his own invention. The matter of his discourse was unintelligible bombast.

How Cagliostro, ignorant as he was, was able to impress even men who might be credited with some power of discernment may be gathered from what Lavater says of him:

> Cagliostro is a man; and a man such as few are; in whom, however, I am not a believer. Oh! that he were simple of heart and humble as a child; that he had feelings for the simplicity of the Gospel and the Majesty of the Lord! Who were so great as he? Cagliostro often tells what is not true and promises what he does not perform. Yet do I nowise hold his operations as deceptions, though they are not what he calls them.

If Lavater could be thus misled by mere impudence, how easy a prey must Cagliostro have found the general run of his fellow beings!

It would be too long to follow him in his wanderings throughout Europe in search of dupes. He travelled in great style, attended by a troop of lacqueys dressed in gorgeous liveries. He and his wife were clothed in the finest raiment and lived in magnificently furnished rooms, where they interviewed numerous guests, and distributed medicines and gave money to the poor. He also founded Lodges and sold "Spagiric Foods." He was often the object of inconvenient attentions of the police, and from many places which he had entered in triumph he was ignominiously expelled. Thus at St. Petersburg in 1780, the Empress sent her physician to examine his stock in trade, with the result that he was ordered to leave Russia forthwith. Complaints of a false assumption of titles and the forging of bills were also made, but the bird had flown. In Poland we find him delivering a harangue on Medical Philosophy and the ignorance of doctors, going through the hocus-pocus of Egyptian masonry, and transmuting metals. Again he was unmasked. Nevertheless he reaped a rich harvest from those fools who, in the immortal words of the Tichborne claimant, having money are made for those who have none. We get glimpses of him successively at Vienna, Frankfurt, and elsewhere.

The tide of his prosperity rose to its highest point in 1780, when he entered Strassburg with the usual showman-like display. There he remained many months, for there he found his fattest victim. This was the Archbishop, Prince Louis Cardinal de Rohan. The Cardinal was interested in botany, alchemy, and the art of divination, and expressed a wish to see Cagliostro. The reply was characteristic of his mode of producing an impression: "If Monseigneur the Cardinal is sick let him come and I will cure him; if he is well he has no need of me, I none of him." It must be admitted that Cagliostro knew how to fool any one whom he could get hold of to the top of his bent. To one he would speak of miraculous cures, to another of high mysteries of masonry and the spiritual life, to a third of the transmutation of metals. In passing a large Crucifix he would start and express surprise that the artist had so well caught the likeness, as if he had seen the original. He would even hint that if the Saviour had followed his advice He would not have met the fate that overtook Him. He worked his way into the Cardinal de Rohan's confidence to such an extent that the prelate had no mind but his. In the Cardinal, who was immensely rich, Cagliostro found not only a disciple, but a protector, and, above all, an inexhaustible source of revenue. A curious account of Cagliostro at this time is given by Dr. Meiners, a professor of medicine at Göttingen. It may be quoted here:

> "Before ever I arrived in Strassburg I knew almost to a certainty that I should not see Count Cagliostro; at least not get to speak with him. From many persons I had heard that he, on no account, received visits from curious Travellers, in a state of health; that such as, without being sick, appeared in his audiences were sure to be treated by him, in the brutalest way, as spies. . . ." "Nevertheless, though I saw not this new god of Physic near at hand and deliberately, but only for a moment as he rolled on in a rapid carriage, I fancy myself to be better acquainted with him than many that have lived in his society for months." "My unavoidable conviction is that Count Cagliostro, from of old, has been more of a cheat than an enthusiast; and also that he continues to cheat to this day."
>
> "As to his country I have ascertained nothing. Some make him a Spaniard, others a Jew, or an Italian, or a Ragusan; or even an Arab, who had persuaded some Asiatic Prince to send his son to travel in Europe, and then murdered the youth and taken possession of his treasures. As the self-styled Count

speaks badly all the languages you hear from him, and has most likely spent the greater part of his life under feigned names far from home, it is probable enough no sure trace of his origin may ever be discovered."

"On his first appearance in Strassburg he connected himself with the Freemasons; but only till he felt strong enough to stand on his own feet: he soon gained the favour of the Praetor and the Cardinal; and through these the favour of the Court, to such a degree that his adversaries cannot so much as think of overthrowing him. With the Praetor and Cardinal he is said to demean himself as with persons who were under boundless obligation to him, to whom he was under none: the equipage of the Cardinal he seems to use as freely as his own. He pretends that he can recognize Atheists or Blasphemers by the smell; that the vapour from such throws him into epileptic fits; into which sacred disorder, he, like a true juggler, has the art of falling when he likes. In public he no longer vaunts of rule over spirits, or other magical arts; but I know, even as certainly, that he still pretends to evoke spirits, and by their help and apparition to heal diseases, as I know this other fact, that he understands no more of the human system, or the nature of its diseases, or the use of the commonest therapeutic methods, than any other quack."

"According to the crediblest accounts of persons who have long observed him, he is a man to an inconceivable degree choleric (*heftig*), heedless, inconstant; and therefore doubtless it was the happiest idea he ever in his whole life came upon, this making of himself inaccessible; of raising the most obstinate reserve as a bulwark round him; without which precaution he must long ago have been caught at fault.

"For his own labour he takes neither payment nor presents: when presents are made him of such a sort as cannot without offence be refused, he forthwith returns some counter-present, of equal or still higher value. Nay, he not only takes nothing from his patients, but frequently admits them, months long, to his house and his table, and will not consent to the smallest recompense. With all this disinterestedness (conspicuous enough, as you may suppose), he lives in an expensive way, plays deep, loses almost constantly to ladies; so that, according to the very lowest estimate, he must require at least 20,000 livres a year. The darkness which Cagliostro has, on purpose, spread over the sources of his income and outlay, contributes even more than his munificence and miraculous cures to the notion that he is a divine extraordinary man, who has watched Nature in her deepest operations, and among other secrets stolen that of Gold-making from her. . . .

"With a mixture of sorrow and indignation over our age, I have to record that this man has found acceptance, not only among the great, but also with many of the learned, and even physicians and naturalists." [1]

Cagliostro was at his height of fame and prosperity in these Strassburg days when he was in undisputed possession of the fat prey he found in the Cardinal. Unfortunately for him a rival came on the scene in the person of the fatal "Countess de la Motte Valois," who was much cleverer than Cagliostro and equally unscrupulous. De Rohan, who had fallen out of favour at Court, was anxious to get into the good graces of Marie Antoinette. He consulted Cagliostro, who predicted that his influence in the State would soon become paramount. It would be out of place to tell here the famous story of the diamond necklace, which was the undoing of the hapless Queen, after ruining the Cardinal and the two parasites who were preying upon him.

In 1781 he made his first appearance in Paris. He laid himself out to attract attention. The fashion of his garments was so strange that children ran away at the sight of him. He wore several watches and a large amount of jewellery. All sorts of stories about him were current in that sensation-loving society. Thus it was related that he had given a supper at which each of the guests was invited to name a dead person whom he wished to see. The spirits of the Duc de Choiseul, Voltaire, Diderot, and Montesquieu were called up, but from the accounts given by the more sensible guests, ghosts of these brilliant men talked the kind of twaddle with which spiritualism has made us familiar.

In 1785 he returned to Paris, and there on August 22nd, 1786, he was arrested, and, in his own words, his house was pillaged by the police. "Elixirs, balsams, precious liquors," all became their prey. His dwelling remained shut up till 1805, when it was opened by the owner, who sold the furniture to recoup himself for the loss of rent.[2] Cagliostro was lodged in the Bastille, but was liberated after nine months of imprisonment. At the same time he was ordered to quit France, and, like most Continental scoundrels, took refuge in London, which then, as now, was the cesspool of nations. There he attempted to make a trade in his Egyptian pills, which he said were sold in Paris at thirty shillings a drachm. He also discoursed to Egyptian lodges and tried to give public audiences as at Strassburg. But his bait did not attract; the law was again on his track, and in 1787 he returned to the Continent, only to be sent out of one country after another, till, in despair, urged apparently by his wife, who wished to get home, he went to Rome. Arriving there in May, 1789, he was laid by the heels on the 29th of the following December by the Holy Inquisition, which had long been waiting to get him within its clutches, not for selling aphrodisiac pills, but for his Freemasonry. He was imprisoned in the castle of St. Angelo, and, after a trial which lasted about eighteen months, he was let off with his life but confined in the prison of St. Leo. This was in April, 1791. In the summer of 1795 he died.

There are many documents concerning Cagliostro, but the definite information that can be extracted from them is inconsiderable in comparison with their number. His portrait tells us more about him, perhaps, than any written record. Of it Carlyle says:

One of the most authentic documents preserved of him is the portrait of his Visage. An Effigies once universally diffused; in oil-paint, aquatint, marble, stucco, and perhaps gingerbread, decorating millions of apartments: of which remarkable Effigies one copy, engraved in the line-manner, happily still lies here. Fittest of visages; worthy to be worn by the Quack of Quacks! A most portentous face of scoundrelism: a fat, snub, abominable face; dew-lapped, flatnosed, greasy, full of greediness, sensuality, ox-like obstinacy; a forehead impudent, refusing to be ashamed; and then two eyes turned up seraphically languishing, as in divine contemplation and adoration; a touch of quiz too: on the whole, perhaps the most perfect quack-face produced by the eighteenth century. There he sits, and seraphically languishes, with this epigraph:

De l'Ami des Humains reconnaissez les traits:
Tous ses jours sont marqués par de nouveaux bienfaits,
Il prolonge la vie, il secourt l'indigence;
Le plaisir d'être utile est seul sa récompense.

Of his healing power the evidence is of the vaguest and most elusive character. He boasted that he had cured fifteen thousand persons—all of whom of course had suffered many things from many physicians to no purpose—and that among all those who came to him for treatment only three had died. He posed as an oracle, and skilfully arranged his *mise-en-scène* so as to produce an effect on the imagination. In his periodical tours of healing the cases were often selected beforehand. Naturally he was particularly successful in dealing with

[1] Quoted in the *Lettre du Comte de Mirabeau à . . . sur MM de Cagliostro et Lavater.* Berlin: Chez François de Lagarde. 1786.

[2] G. Lenôtre, *Vieilles Maisons, Vieux Papiers*, vol. i.

women. Like all faith healers, he attributed his failures to the lack of faith on the part of the patient. He had considerable shrewdness and insight into the weaknesses of human nature; in particular he was a good physiognomist—an art which, carefully cultivated by long practice, stood him in good stead in the choice of his victims. Like the Ancient Mariner, he might have said—

> The moment that his face I see
> I know the man that must hear me:
> To him my tale I teach.

Doubt and incredulity he met with the most arrogant insolence.

What was Cagliostro's secret? As already said, it was the infinite gullibility of mankind, to whom he offered bodily health by means of a panacea of which he alone had the secret; health of soul by means of his Egyptian Freemasonry; and riches beyond the dreams of avarice by means of the philosopher's stone. According to the anonymous author of a *Mémoire Authentique pour servir à l'histoire du Comte de Cagliostro* (Strasbourg, 1786), he learnt the secret of the panacea which made man immortal from Saint Germain; it was simply Tokay coloured red or green as might be deemed more likely to inspire belief. Saint Germain further gave him advice which quacks of all kinds find useful: To shun, hate, and calumniate people of intelligence; to flatter, wheedle, and cajole fools; and to surround himself with an atmosphere of mystery. According to another account, his elixir of eternal youth consisted of malvoisie wine mixed with the products of the distillation of the spermatic fluid of certain animals with the juice of several plants.[3] Cagliostro, it is said, sold two kinds of elixir: one which "fixed" people at a certain age, the other, considerably more costly, which made them twenty-five years younger.

We have little doubt that Cagliostro did work some cures. According to Mirabeau, who took some trouble to get information about him, he had no knowledge of the art of healing except in the sphere of nervous disease.[4] But he had the power of exciting faith in neurotic people who were ready to be deceived by any impostor who gave himself the airs of a prophet. It is the old story, which is repeated in every age, and which is told with blatant emphasis at the present day. The form may change but the thing itself is eternal.

INTERNATIONAL CONGRESS ON DISEASES OF OCCUPATION.

THE second International Congress on Diseases of Occupation was held this year at Brussels. The opening ceremony took place on September 10th in the Palais des Fêtes at the Exhibition, the MINISTER OF INDUSTRY AND LABOUR (M. Hubert) delivering the inaugural address. There was a large attendance from practically all European countries, including about thirty British representatives, among whom were: Dr. T. M. Legge, of the Home Office; Professor Glaister and Dr. A. Scott, of Glasgow; Dr. A. E. Boycott, of Guy's Hospital; Dr. Kenneth Goadby, of London; Dr. W. F. Dearden and Dr. W. M. Hamilton, of Manchester; Dr. H. Langley Browne, of West Bromwich; Dr. R. Prosser White, of Wigan; Dr. W. Robinson, of Sunderland; Dr. A. Wilson, of Sheffield; Dr. G. McBride, of Leeds; Dr. A. Glen Park, of Bolton; Dr. Milburn, of Hull; Lieutenant G. C. C. Damant, R.N.; and a number of gentlemen attending on behalf of various associations and insurance societies.

State Control and Industrial Hygiene.

The afternoon of the opening day was devoted to the consideration of State medical supervision and control of industrial occupation. In a paper on the function of the certifying surgeon, Dr. DEARDEN drew attention to the fact that the principle of medical supervision had been recognized in England from the time of the passing of the first Factory Act in 1802, and showed the extent to which this is exercised by the certifying surgeon of the present day under a number of different headings. He explained the methods adopted by factory surgeons in following out their work, and laid special stress on the extent to which the fitness of the individual for a particular process is regulated by attaching conditions to the certificate. An analysis of 5,775 certificates granted with qualifying conditions during 1909, showing the nature of these conditions and the defects of body or process calling for such, was given. A table was also provided which showed the different processes in the spinning and manufacture of cotton which required juvenile labour, under what conditions and in what manner each process may be considered injurious, the state of health or degree of infirmity considered as injurious, to what extent refusal of the certificate is required or to what extent this should be made conditional. He presented a further tabulation of causes for refusal of the certificate in 14,000 cases of physical unfitness. Although he admitted that the system of supervision of the factory surgeon could be improved and his function extended, he thought the principles upon which it was founded were sound and worthy of serious consideration from other nations. He laid special stress on the fact that this official is free from all local control by municipalities or other like bodies, being directly responsible to the State for the due carrying out of his duties. Dr. A. GLEN PARK, of Bolton, followed with a paper on certificates of fitness in the cotton trade, describing in detail the different processes at which children and young people are employed and the particular dangers of each. He pointed out the necessity existing for the certifying surgeon to be possessed of a knowledge of the different trade processes in his district in order to enable him to properly regulate conditional employment. An interesting account was provided by Dr. ARPAD KRITZ, of Vienna, of an experimental system, applied to the twenty-six trade schools of Vienna, whereby an obligatory course of industrial hygiene is given to the pupils, who at the same time are under medical supervision and have their future employment regulated according to their physical fitness or otherwise for the particular trades they wish to take up. In the discussion which followed, the office of certifying surgeon was much commended, one delegate of Belgium going so far as to say that the system was ideal, and insisting that if such beneficial restrictions could be adopted in so free a country as England, his own people, though they made so strong an objection on the ground of a parent's right to regulate the doings of his own child, might safely follow. The general drift of the discussion was in favour of medical examinations for fitness and that these should be periodical; that all cases of industrial disease or poisoning should be instantly notified and followed up by a medical investigation; that those engaged in dangerous trades should be placed under strict medical supervision.

Compensation for Industrial Disease.

The second principal discussion, on the subject of compensation for industrial disease and the possibility or otherwise of including such in the same category as industrial accident, was taken on September 11th. Dr. T. M. LEGGE described the provisions of the Workmen's Compensation Act of 1906 in so far as they extend to the indemnification against the twenty-four industrial diseases and poisonings which are scheduled, outlining the methods of procedure and giving statistics of the first year's working.

Dr. R. J. COLLIE gave an account of the working of the Compensation Act, and was very strong on defects of the system so far as concerned industrial accidents. He held the view that litigation was responsible for a great deal of auto-suggestion, for which compensation was more effectual as a cure than the physician. He pointed out the tendency of so much compensation to create systems of medical inspection on commencing work and after illness, and how this, under the present law, reacts unfavourably upon the workman, particularly as no provision is made for contracting out. He showed how little the services of the medical referee are utilized, either for report or as an assessor, and drew a comparison between the way in which expert knowledge is utilized in case of accident and the manner in which it is brought to bear upon scheduled industrial diseases. In the former case the referee is not appealed to unless both parties agree, which in practice is very rare, while in industrial diseases no steps can be taken to obtain compensation without a certificate from the certifying surgeon, and either party feeling aggrieved at his

[3] Eliphas Lévi, *Dogme et Rituel de la Haute Magie*, Paris, 1861.
[4] *Lettre du Comte de Mirabeau à . . . sur MM. de Cagliostro et Lavater*, Berlin, 1786.

can appeal to the referee, whose decision is final. He could not understand why the same machinery should not have been made applicable to the whole of the Act. He considered that either party should be entitled to call for a report from the medical referee or for the presence of a medical assessor.

Dr. Olivier Lenoir (Paris) discussed the difficulties experienced in bringing industrial disease under the accident heading, and the modern tendency to stretch a few points in favour of the workman to accomplish this. He stated that in France a law is projected by which compensation would be allowed in all cases of sickness which did not last more than thirty days, and that, after such period, those which are shown to be due to industrial causes would have their compensation extended. The insurance is to be mutual and shared in by the State, the employer, and the employee, a system which he believed to be the correct one and calculated effectually to abolish the objectionable class distinction between "pensioneurs" and "pensionées."

Drs. Heyermans and Kooperberg (Amsterdam) were of opinion, from their experience of State insurance in Holland, that a clear distinction should be made between industrial disease and accident, and that if the former were legislated for many complications which now arise through the workman having to seek the aid of the law relating to accidents, when he is suffering from what should properly come under sickness qualification, would disappear. They thought that English legislation for industrial disease provides the best model to follow. They pointed out that it was difficult to understand why a workman becoming deaf as the result of an explosion should be more entitled to compensation than a boiler-maker who, in the course of his work, becomes deaf from a constant repetition of what are equivalent to small explosions. They stated their objections to a broad definition of industrial disease, and were agreed that a fixed schedule of those entitled to compensation could be very satisfactorily worked in Holland.

Dr. Teleky (Vienna), Dr. W. Hanauer (Frankfort), Dr. A. Perser (Berlin), Professor Querton (Brussels), Dr. Mugdan (Berlin), and others took part in the debate, the consensus of opinion being to the effect that the two should not be classed together, but that industrial disease should be separately legislated for, preferably on the English system. The German system of insurance against all illness to the workman was highly commended, but regarded as too great an undertaking to commence operations with.

The Prevention of Ankylostomiasis.

The first subject for discussion on September 12th was on the measures which should be taken against the spread of ankylostomiasis. Sir Thomas Oliver presented a very valuable paper, which showed that although English coal mines were not at presented infected, the liability of such to infection should not be overlooked. He thought that those coming into England from infected districts in other countries should have their stools microscopically examined as a precautionary measure. He further described some interesting experiments which he had made to ascertain the resisting power of ova and larvae to desiccation and to the action of the gastric juices, and others on the harmful effects of cinders, basic slag, sodium chloride, iron sulphate, and copper chloride. He pointed out that a ton of iron sulphate, costing £8, would effectually disinfect several miles of mine roadways.

Dr. A. E. Boycott described the incidence of the disease in the Dolcoath Tin Mine, in Cornwall, and the methods adopted for its eradication, the latter being apparently confined to early administration of thymol to the patients.

Dr. E. Malvos (Director of the Bacteriological Institute, Liége) gave figures showing the enormous diminution of infected persons in his district between 1902 and 1909, the period during which active methods against the disease had been in operation. In the former year one half of the 5,680 miners working in certain mines were affected, and 20 to 50 per cent. of the 6,060 miners in other mines, whilst in the latter year there were no mines with 50 per cent. and over of the personnel infected, and only 300 of a personnel with from 20 to 50 per cent. infected. He ascribed this success to systematic microscopical examination of stools, periodical inspection of miners, and the antiparasitical treatment of all worm-carriers as they were discovered.

Dr. H. Wolff (Bohemia), Dr. Delbastaille (Liége), Dr. T. Petrof (Sofia), Dr. Cailleau (Mons), Dr. H. Goldman (Odenberg), and Professor Monti (Pavia) also contributed their views. The pronouncements which found most favour were as follows: Education of miners on the subject; disinfection of galleries; provision of suitable pails for the dejections, with proper attention to removal and cleansing; the supply of fresh water to the workings for drinking purposes; the provision of baths and lavatories on the surface, with facilities for change of clothes; the erection of efficient w.c. accommodation on the surface, and the inducement of miners to use these instead of the provision below ground; the insistence on certificates of freedom from the disease in case of fresh hands; periodical microscopical examination of stools; and suitable treatment of infected cases. The drugs recommended as most successful in treatment were ethereal extract of male fern, thymol, and toeniol, the last being a compound of sebriol and salicylate of thymol.

(*To be continued.*)

SCIENCE NOTES.

On account of the rather frequent mistakes which are apt to be made in distinguishing edible from poisonous mushrooms, the Board of Agriculture and Fisheries has issued a pamphlet dealing with these fungi. The species of mushroom are so numerous that without special knowledge it is no easy matter to recognize and differentiate them all. Not infrequently a poisonous variety is a close ally of an edible form. It is reassuring to learn, however, that the majority of mushrooms are edible, or at least harmless; and a certain safeguard is to become thoroughly familiar with the comparatively small number of harmful kinds. No rough-and-ready test is sufficiently general to prevent mistakes; no reliance is to be placed on the presence of a skin that can be readily peeled off as a sure sign of an edible mushroom, and there is just as little foundation for the statement that a poisonous variety can be distinguished by the tarnishing of a silver spoon when placed in contact with it. The very wholesome suspicion with which most people regard fungi other than the common mushroom leads to the neglect of many other varieties even more palatable. There are, for instance, the tufted mushroom, the bleeding agaric, the parasol mushroom, the blewits, and the common morel, all of which are believed to be superior in flavour to the common mushroom. The Board of Agriculture has the economic purpose in view of teaching people, and especially those resident in the country, to utilize a valuable supply of food. Together with short descriptive notes the pamphlet contains well-executed coloured plates of twenty-five of the commonest British mushrooms, eight of which are poisonous. The drawings were prepared by Mr. Massee of the Kew Gardens, which is a guarantee of their value and accuracy.

An interesting matter about which very little is known is the rate of the heart beat amongst various animals, and the factors which influence it. In a general way it is known that the pulse-rate tends to be inversely proportional to the size of the animal; but the actuality of this generalization has as yet not been supported by many exact observations, nor its significance determined by thorough investigation. As far as we can tell at present the rate at which the heart beats seems to be determined by its own particular properties, and the amount of work which it has to perform. Its size, minute structure, its relation to the nervous system, the salts present in the blood, and the temperature all bear an influence, but which of these is of chief import it is difficult to say. The extent of our knowledge of the subject is rather well summed up in *Science Progress* for July, by Dr. Florence Buchanan, in an interesting article entitled, "The Significance of the Pulse Rate in Vertebrate Animals." Dr. Buchanan has worked at the subject herself, and is able to give the results of personal experience. The amount of work which the heart has to do depends to a large extent on the structure and habits of the animal, and the relative

weight and size of the heart vary accordingly. Thus in fishes, where the circulatory system is comparatively simple and where no elevated temperature has to be maintained, the size of the heart is extremely small. It is seldom more than one-thousandth of the body weight, and in the flat fishes especially it may be as small as 0.04 per cent. of the body weight. In the small singing birds, on the other hand, in which a great demand is made on the lungs, the weight of the heart may reach 2.5 per cent. of the body weight. A bird's heart may therefore be relatively thirty or forty times the size of that of a fish. The actual size of the animal is of considerable importance in determining the frequency of the beat in warm-blooded animals. The smaller the animal the greater is its relative superficial area, and the greater the heat loss. A greater amount of oxygen must therefore be supplied to the tissues, and this end is secured by an increase in the pulse-rate. These two factors—namely, the absolute weight of the heart and the amount of oxygen consumed, estimated in carbonic acid gas expired per kilogram per hour—are sufficient to give an approximate idea of the pulse-rate. Thus, if the pulse-rate of a pigeon be 185, the weight of its heart 1.5 per cent., and the carbonic acid figure 3.4 c.cm., the pulse-rate of another bird—for example, a sparrow—can be calculated provided the weight of its heart and the amount of carbonic acid expired be known. From a number of sparrows the average weight of the heart is found to be 1.36 per cent. and the carbonic acid expired 12.2 c.cm. The pulse-rate ought, therefore, to be $185 \times \frac{12.2}{3.4} \times \frac{1.5}{1.36} = 732$. This agrees quite closely with actual observation, and the fact that a similar close approximation may be made in other cases goes to show that the pulse-rate is largely dependent on these two factors. This does not hold good in all cases, however; in the rabbit, for instance, the observed pulse-rate falls short of that determined by calculation to the extent of 30 per cent., and it is obvious that some other factor must come into consideration. What this is remains doubtful. Dr. Buchanan describes the method of taking the pulse in small animals, and discusses various other points which need not be referred to here. The article is welcome as marking the beginning of an investigation of much promise, which may not only modify certain physiological conceptions but may also provide further material for the study of evolution.

THE INTERNATIONAL HYGIENE EXHIBITION.

THE following article, which appeared in the *National Zeitung* of August 5th, reveals what construction has been placed on the action of the British Government in refusing to participate in the Dresden Hygiene Exhibition in Germany. We need not comment on the article further than to say that the Government cannot justly complain of the tone of the article, since the action in refusing to go to Germany to take part in the greatest hygienic undertaking ever organized is incomprehensible for a country which boasts of being the pioneer in hygiene, and the excuse offered for this action is too flimsy to foster credulity:

ENGLAND'S NON-PARTICIPATION IN THE HYGIENE EXHIBITION IN DRESDEN.

Berlin, August 5th.

A remarkable side-light has been thrown on the "friendly feelings" which England entertains for Germany by the recently reported fact that the English Foreign Office has declined to organize a British participation in the International Hygienic Exhibition in Dresden. We learn from Dresden that in a very carefully worded explanation issuing from a "well informed source" an attempt has been made to attribute this refusal to the "private character" of the great scientific institutions of England. In this effusion of the "well informed source," of which doubtless the direction of the exhibition knows more than it is inclined to say, we read *inter alia* that in spite of appearances it is improbable that political motives have been responsible for the refusal, but that the cause might be sought in the peculiar conditions obtaining in England and that an attempt is being made to render an English participation possible by inviting private subscriptions.

We should have thought that the English Government would have been able to find plenty of ways and means to render possible a participation of its country in the great German Hygiene Exhibition next year if it had entertained even to the smallest degree "friendly feelings" toward Germany. The explanation of the Exhibition Administration, however well intentioned, cannot explain away the fatal suspicion that English friendship is extremely slender, not only in politics, and that this decision must be ascribed to an animosity against Germany, possibly because the first International Hygiene Exhibition has invited the civilized States to come to Germany. England, the land of the Lister Institute, and other hygienic institutions which might justly be termed classical, could certainly have taken part with ease and advantage in the International Hygiene Exhibition, Dresden, 1911, if only a little goodwill had been present. That she holds herself aloof from this friendly competition which will take place in Germany between the civilized nations, that she cannot bring herself to accept Germany's hospitality on the neutral ground of the humane, cultured endeavours by which the whole of mankind will benefit, does not reveal a deeply rooted "friendly feeling."

The suggestion that an attempt is to be made by the collection of private funds, to render an English participation still possible, indicates that the impression which the refusal of the German invitation must have produced has been recognized in England. If these endeavours are crowned with success, so much the better for England; since whatever happens no blame can be attached to Germany.

LITERARY NOTES.

IT is always interesting to see a famous man of the past through the eyes of his contemporaries, and in the second volume of the *Memoirs of the Duchesse de Dino* (published by William Heinemann, London, 1910) we are afforded a glimpse of Heine's famous university chum, the great surgeon Dieffenbach, as he appeared to one of his own generation. Madame de Dino, who was travelling in Germany with her eldest son, M. de Valençay, during the summer of 1840, writes from Berlin that that city "is just now much excited by a mode of curing squinting, practised by Dieffenbach. Out of two hundred cases he has had only one failure, and that was due to the impatience of the patient. It is a very clever idea, and people come in from all parts to be made beautiful instead of ugly." Some days later she writes that her son has actually seen Dieffenbach operate, and gives a full account of the scene. She says:

> My son, whom I found at our hotel on the point of coming in . . . had just been watching the operation for curing squinting, and was full of admiration for Dieffenbach, his dexterity, and the result of the operation. Of the two patients, both young girls, one did not say a word, and the other cried a great deal. The mere demonstration would have made me want to scream. The whole operation lasts from seventy to eighty seconds. The operator is helped by three pupils; one raises the upper eyelid, the second depresses the lower lid, and the third wipes away the blood between the two incisions. The first incision divides the lower part of the white of the eye; then with a little hook Dieffenbach draws forward the muscle covered by that part, cuts it through, and the operation is over. This muscle in the case of people who squint is too short, and brings the eye too close to the nose. As soon as it is cut through the pupil goes to its proper place.

Dr. Harold E. Kitchen (Manchester) writes: "In the 4th series of Dr. Cabanès's *Le Cabinet Secret de l'Histoire*, the interested reader will find the story of the 'wanderings' of Louis XIV's heart, but with some important differences to that related in Literary Notes in the JOURNAL of September 3rd. Dr. Cabanès relates that the incident took place at No. 104 Rue du Faubourg-Poissonnière, where Dr. Buckland then lived, and the time of this gruesome adventure is given as *before* (not after) the Revolution. Assuming the story to be correct, the heart must have been digested long before Dr. Buckland was laid to rest in Westminster. Dr. Cabanès goes on to say:

> "Unfortunately, a recent discovery contradicts this legend. The Carnavalet Museum has had in its possession for nearly ten years, a letter of the Comte de Maurepas, minister of Louis XV, dated from Versailles, March 19th, 1730. In it M. de Maurepas informs the Duc d'Artois that, according to the king's command, the heart of Louis XIV would be interred the next morning, the 21st of March, in the Church of the Jesuit Fathers of the Rue Saint Antoine. He invites him to attend along with M. Robert de Cotte, architect of the king's buildings, and the steward Jules de Cotte, to place the heart 'within the mausoleum constructed to receive it.' To this letter is joined the procès-verbal of the ceremony, which took place, in fact, in the morning of the 21st of March."

If the statement that the heart of the Sun-King was swallowed by Buckland before the Revolution is true, there

was indeed ample time for it to be digested, as the famous dean was born in 1784 and died in 1856. He must, however, have shown his taste for "strange food" at a very early age.

Everything that serves to throw light upon the past ought to be of interest to the present generation, and old letters, diaries, and other family papers are of inestimable value in affording us a glimpse into the everyday life of our forefathers. The *Nineteenth Century* for September contains an article by Mr. C. S. Tomes on Middle-class Life Two Hundred Years Ago, which gives us a vivid picture of the manner of life led in those days by the minor gentry, country clergymen, and the like. The author has gathered his materials from an old account book, entitled the "Extraordinary Book in my own Concernes," once the property of Mr. Francis Taylor, a gentleman who, in the year 1708, was living upon his own small estate at South Littleton, near Evesham; and these old papers have proved to be a treasure-house of interesting details concerning family life in England at the commencement of the eighteenth century. We learn from the "Extraordinary Book," for instance, what kind of table was kept in middle-class country houses at that period, and the sort of food that was usually eaten. It is obvious, from Mr. Taylor's accounts, that a great deal of meat was considered necessary, for, though his household consisted only of six persons, they managed to get through 1,400 lb. of mutton and beef in the course of one year. It is only just to add that part of this amount was consumed by the labourers and farm hands in the employ of the Taylors; but it is a curious fact that this enormous consumption of meat in England had been remarked upon by foreign visitors nearly two centuries earlier, and was, apparently, still a national feature in the reign of William and Mary. The meat served at the master's table was, doubtless, fresh enough, but such does not seem to have been the case in humbler households. When a sick sheep died, Mr. Taylor had no compunction in selling the carcass to "ye poore" at 4s. 6d. the quarter; and a cow who had found a watery grave in the moat round his house was likewise sold to the poor for 11s. 2d. The diet at Mr. Taylor's table seems to have been a varied one. His accounts show that his family enjoyed various kinds of fish, barrels of oysters, giblets, fat geese, metheglin (a sweet wine made from honey), and also lampreys. A quaint entry is once made concerning the latter, when they had been bought ready potted: "6 Pottes of lampreys, 13s., of these 5 pottes were sent as a present, ye other was eat with Rattes." At that time both tea and coffee were very expensive luxuries, and seem to have been bought by the Taylors in very small quantities, a quarter of a pound at the time. Neither did they drink much wine. Indeed, their cellar seems to have contained only three kinds—red and white port, which cost from 4s. 6d. to 6s. 6d. a gallon; and canary (sack), which was a little dearer, a gallon costing something like 8s. All these wines were bought in bulk in London, Bristol, or Worcester, and were bottled at home, chiefly in pint bottles. A menu of the dinner given by the Taylors at the christening of one of their daughters gives a good idea of the usual diet of the period. The first course consisted of:

A Salmon melt and 2 carps boyled with small fish fryed round ye dish
A loyn of veal royst
A pigeon pie
A carrot pudding
A piece of beef boyled with cabbage and boyled Pigg laid round about it
And 2 dishes on side table p. remoles (viz., a legg of mutton boyled with Callowflowers and a quarter of lamb rost).

The master of the house remarks of these two last dishes, "No need of this, and might have bin saved." The second course was not so elaborate; it merely consisted of:

A young Turkie rost
2 Ducks rost
A dish of pease
A dish of Tarts, Cheesecakes, custards, all in a dish with a Sillabub in ye middle.

There is no record left of how many guests sat down to these Gargantuan feasts, nor how they survived it; neither the vegetarian nor the apostle of the simple life had a place amongst our hungry forefathers. A good many details concerning the medical men of the period can be gleaned from Mr. Taylor's accounts. In those days the surgeon was still looked upon as far lower in the social scale than the physician, and each physician had his attendant apothecary, who visited his master's patients in order to apply plasters and attend to minor details of that kind. On one occasion, we learn from the account book, the physician having ordered an emetic for one of the household, the apothecary spent the night at Littleton in order to see the patient safely through his trouble. Frequently, indeed, the apothecary of those days, though he possessed no medical qualifications of any kind, was called in to treat minor ailments in preference to the doctor, whose fees were higher. We hear of one, Jarret Smythe, who bled Mr. Taylor for a bad cold, and was paid 5s. for the operation, though the patient complains that "he took 15 oz. too much at one time." This same Jarret Smythe appears to have been a successful man. He made a considerable amount of money through bleedings, and in spite of the fact that he sold drugs and veterinary medicines, he managed to marry an heiress. His wife may possibly have been won by his claims to gentle blood, rather than by his professional successes, for Smythe claimed cousinship with a Somersetshire baronet. It was only for colds and other trifling indispositions, however, that the Taylors of Littleton consulted the apothecary; in cases of serious illness either the physician or surgeon was called in. The fee of the former was usually a guinea; that of the latter varied according to the case. Thus, when the surgeon Owen bled Mr. Taylor "in ye right arm for a pain about my left shoulder," he received 5s.—exactly the same amount as Jarret Smythe had received for a similar operation; but when consulted about "ye dropsie," Owen charged 7s. 6d., as well as 5s. for a "little bottle of water for ye dropsie." His "little bottle of water," however, does not appear to have been very efficacious, for we next hear of Mr. Taylor consulting a quack, a clergyman, who apparently endeavoured to add the cure of bodies to his cure of souls. From Taylor's delay in paying the bill of this clerical practitioner, Mr. Tomes assumes that his medicines were of no more use than the surgeon's, though Taylor's entry in his "Extraordinary Book," when he finally does settle the account, is only to the effect that he paid "to the Revd. Mr. Schrine Smyth for three papers of powders he sent me for ye dropsie, 5s." All the domestic literature of the centuries which preceded the introduction of vaccination is full of references to small-pox and the fearful ravages caused by that terrible disease. The Taylors' account book is no exception to the general rule. In July, 1710, the eldest daughter, Judith, left home on a visit to London and never returned. She died of small-pox in September; and in the same year one of the sons fell ill of the same disease, for there is an entry in the account book concerning the amount paid to a man who was sent into Coventry "to see my son Frank ill of ye small-pox"; and later the sum of 10s. is noted down as being sent to the woman who had nursed him through his illness. Some time after, an outbreak of small-pox occurring in the village, the youngest daughter was sent away from home in order to be out of the risk of infection, and a year later she was obliged to leave home again for the same reason. On the first occasion Miss Taylor took refuge in the house of the apothecary, Jarret Smythe, to whose wife her father paid £1 6s. 6d. for six weeks' "tabling"

Going back a hundred and fifty years further we get a glimpse of the manner of living in the Merrie England of those days. In his *Two English Queens and Philip* Martin Hume says that at the time of Mary Tudor's marriage with Philip II of Spain, during the summer of 1554, one of the King's Spanish suite, who had followed him to England, sent home the following description of English living:

> The ordinary consumption in the palace (of the Queen) every day is from eighty to a hundred sheep, with a dozen fat oxen and a dozen and a half of calves, besides vast quantities of game, poultry, venison, wild boar, and rabbits; whilst, as for beer, they drink more in the summer than the river would hold in Valladolid. The ladies and some of the gentlemen put sugar into their wine.

British Medical Journal.

SATURDAY, SEPTEMBER 24TH, 1910.

POOR LAW BABIES IN LONDON AND BERLIN.

IN the issue of the *Poor Law Officers' Journal* of September 16th Dr. C. Thackray Parsons severely criticizes an article by Dr. Janet Lane-Claypon which appears in the current number of the *Nineteenth Century and After*, and which professes to be a comparison of the methods of treatment of Poor Law babies in London and Berlin. It cannot be said that Dr. Parsons's criticism is at all too strong. He evidently writes with full knowledge of the conditions and methods of treatment in London Poor Law institutions, and is able to show conclusively that Dr. Lane-Claypon can have had only a very superficial acquaintance with London workhouses, and was by no means properly equipped to make the comparison that she attempts. Dr. Lane-Claypon, on the other hand, has evidently a first-hand knowledge of the methods in use in Berlin, and gives most useful details of the boarding-out system and of the Kinderasyl for infants and the Waisenhaus for children over one year. These institutions may be described as receiving houses or homes for quarantine, in which children are kept for about three weeks, or longer if necessary, under the best sanitary conditions, with proper medical and nursing attention, until they are seen to be in a fit condition for boarding-out. The boarding-out is in carefully-selected houses, mostly in Berlin, though some are in the country, and the children are kept under an elaborate system of inspection by skilled officials.

The details given of the Berlin system are most valuable, and if Dr. Lane-Claypon had confined herself to this she would have done good service. But when she comes to make a comparison between London and Berlin she by no means succeeds in proving her contention that the results of the Berlin system are superior to the results obtained in London. She begins by quoting some statistics about infant mortality in English workhouses from the Minority Report of the Poor Law Commission, which, as we showed in the JOURNAL for July 10th, 1909 (p. 917), are open to the greatest doubt and which are shown by the Local Government Board memorandum to be distinctly misleading. This alone would be a bad foundation to rest on, but what more completely vitiates Dr. Lane-Claypon's comparison is that the statistics alluded to are not London statistics at all, but refer to specially selected workhouses all over the country. In other words, while professing to compare Berlin and London, she takes on the one hand the ideal system of Berlin, neglecting the general methods in use in other parts of Germany, while on the other hand she chooses, not the methods used in London, but a haphazard collection of workhouses from all over England. Thus the comparison is not in fact between Berlin and London, but between the best that Berlin can produce and a heterogeneous collection of ordinary workhouses situated in various parts of England.

It is not surprising that Dr. Parsons strongly protests against this method of comparison as not being fair to London. He points out that though Dr. Lane-Claypon quotes from the Majority Report that there were on March 31st, 1906, 2,799 children under 1 year and 11,424 under 5 years in receipt of indoor relief, it is not fair to jump to the conclusion that all these were in workhouses. First of all, these figures are not for London, but for the whole country; and, moreover, taking all England and Wales, of 6,511 children under 3 years of age in receipt of indoor relief, only 3,367 were in the ordinary workhouse wards, the figures for ages 3 to 5 not being given. But of the children in receipt of indoor relief in London, many were not in workhouses at all, but in special sick wards or infirmaries in separate schools, cottage homes or scattered homes, ringworm schools, ophthalmic schools, seaside homes for tuberculous children, the convalescent home at Carshalton, and institutions for the blind, the deaf and dumb, epileptic and other institutions; and, as a matter of fact, on January 1st, 1910, there were only 1,227 children under 16 years of age in all the London workhouses. Thus indoor relief of children in London by no means implies as Dr. Lane-Claypon seems to infer, that the children are in workhouse nurseries.

But, further, Dr. Lane-Claypon seems to assume that the statement of the Minority Report that the nursing of the workhouse babies is often in the hands, not of trained nurses, but of pauper women, and even of feeble-minded pauper inmates, refers to London, whereas the statement really refers to England generally; and, as a matter of fact, Dr. Parsons affirms that there is not a single workhouse in London where feeble-minded paupers are used to look after babies, most of them being in charge of trained nurses, and all of them being personally inspected and supervised by medical men or women, while the mothers are instructed in the proper care of their infants.

Nor is Dr. Lane-Claypon at all more accurate in her comparison of the death-rates in the London and the Berlin institutions. Omitting the death-rates during the first week of life, as the Kinderasyl is not used as a maternity hospital, Dr. Parsons shows that in the London workhouse and infirmaries in 1907 the death-rate from 1 week to 1 year of age was 78.8 per 1,000, while in the Kinderasyl, though it was only 54.7 in 1906, in 1907 it was 84.4, which is actually higher than in the London institutions. These figures are given only to show that Dr. Lane-Claypon's claim for the superiority of the Berlin system is unfounded, but comparisons based on single years, and for such small numbers, cannot be relied on for practical purposes.

Another statement made by Dr. Lane-Claypon is equally open to criticism; it is certainly not correct to state as a general fact that "only a small percentage of children are born unfit." Even as applied to the general population this is open to doubt, as it is often impossible to tell definitely whether a newly-born child is fit or not. Altogether apart from the environment into which a child is born, weaknesses and actual diseases may perhaps be inherited, which are not readily recognized at first, and often only declare themselves after a few weeks; weaknesses, too, which would probably show themselves in many cases however good the environment after birth were made. Dr. Parsons quotes on this point the admirable address of Dr. Ballantyne, delivered before the Section of Medical Sociology at the annual meeting of the British Medical Association; he also gives special statistics

regarding the maternity ward of the Fulham Infirmary, which show that no less than 21.9 per cent. of the infants started life with a marked physical inferiority. This is only what might naturally be expected when we take into consideration the character, mode of life, and physical condition, as well as the environment, of many of the mothers prior to their confinement. Every one will agree with Dr. Lane-Claypon when she advocates the best possible treatment for Poor Law babies. The welfare of the race demands nothing less. We cannot admit that London is so bad as it is painted, but we do agree that there is room for improvement. It may be open to question whether the boarding-out system would be the best for infants, and still more doubtful is it whether the almost military strictness of the Berlin system would be tolerated in England, or, indeed, whether it is advisable. The demand in England will be for some system more elastic in its application. By all means let us accept any good suggestion from Berlin calculated to improve children born unfit and to prevent the fit being damaged; but do not let us fail to recognize the fact that many children are born unfit, if only because this involves the recognition of the further fact that to prevent excessive infant mortality the treatment must begin with the mother before the child is born.

THE DETECTION OF MALINGERERS.

WHEN the Workmen's Compensation Act of 1897 came to be passed it was confidently expected that, sooner or later, it would throw a large amount of new work upon the medical profession. But it was only faintly appreciated that one of the duties to be performed by medical men would be the detection of malingerers. Of inducements to men to malinger there appears, unhappily, to be no end. It is but human nature to prefer idleness to the daily round, and a prolonged holiday begets disinclination and inability to work. Further, in addition to the benefits which accrue in the form of compensation, there is sick benefit to be obtained from the friendly society or the trade union. A man who receives half his ordinary wages in the form of compensation, together with sick pay from his union and his friendly society, is in a position which excites the envy of the toiling masses.

So far as the friendly societies are concerned there is evidence that the added inducements to malinger are having a serious effect upon their funds. Thus, at the Manchester Unity conference last Whitsuntide, the actuary recommended the "Order" to deal with the question of accident liability. He expressed the view that the mining lodges would never be in a solvent position unless they expunged the accident risk from their liabilities, and confined themselves solely to the provision for sickness and death benefits; that the pressure of claims was so severe that, unless exceptional measures were taken, the Unity would be in a very serious position in the near future.

But it is unnecessary to quote figures and statistics to show that the malingerer is thriving on the rich soil produced by the Workmen's Compensation Act. He is there; and it is one of the functions of the practitioner who is concerned with compensation cases to detect and expose him. Your malingerer is often prepared for the dodges which are usually resorted to in the course of a medical examination. He knows all about knee-jerks; he can feign blindness with wonderful skill, and he finds but little difficulty in convincing a county court judge that he is unable to exercise his usual calling. A rogue of this character is fair game for any artifice.

Certain kinds of alleged complaint of physical defect can easily be exposed by any practitioner who knows his business. For example, if a man alleges that he is totally blind of one eye it is possible to confuse him with optical instruments so that he does not know which eye he is using. But there are other cases of pure shamming which can be detected by the exercise of a little common sense and the study of human nature. We recall the case of a man who said he had something wrong with his leg, and who came limping into the consulting-room of the employer's physician. Having reason to suspect unfair play, the physician said very little, but took care to watch through the window the way in which his patient walked down the street after the interview. The limp had wholly vanished! Dr. Collie, to whom employers of labour are indebted for having established the right of the physician to examine a claimant for compensation in private, lately recounted the following amusing incident to the Medico-Legal Society: "The other day I proved to a house-surgeon that a dear old lady (whom he had condemned to wear for many weeks a back-splint for an alleged stiff knee-joint on the right side) was a humbug by removing the splint and directing her to sit down and take off her right boot, whilst I eagerly plied her with questions as to what exactly happened at the moment of the accident. I asked whether the defendant's servants had been becomingly polite, what she said, what they said, and so forth—all of which was no business of mine. It was intensely interesting to her, however. She forgot the present, and lived in the past, removing as she spoke her boot in the usual way—that is to say, she crossed her legs and bent her knee!"

The malingerer who is determined to get damages, "come what come may," will sometimes endure an amount of suffering during an examination which is calculated to deceive the unwary. The following incident, which also came within the experience of Dr. Collie, is an illustration: A labourer came to him complaining of pain when the dorsal region of his back was touched. There is a popular—and, of course, erroneous—idea that an electric current is not felt even in minor injuries to the spinal column. This patient was evidently seized with this idea. Dr. Collie applied the battery. The claimant said he did not feel it over the painful area. When the current was made considerably stronger the man tried to bear it manfully. At last, with a howl, he fell in a heap on the ground. As there was no one in the room to sympathize, Dr. Collie told him not to make a fool of himself, explaining that he now knew what had been the matter with the man, and that he was to go back to work at once. The account concludes: "His wife, who was downstairs, hearing the yell, entered the room, and I explained to her that he was now well, as I had cured him with the battery. I said I was very pleased; he said he was; and the wife agreed with both of us. He said he would go back to work forthwith, and he did so."

Sometimes the practitioner who is subpoenaed as a witness has an opportunity of exposing a fraud almost, but not quite, in the presence of the court. Mr. Arthur S. Morley, who recently read a paper entitled "Abuses of the Workmen's Compensation Act," at a meeting of the Medico-Legal Society, related the following experience: "A dock labourer

was struck on the back of the head by a falling spar, and sustained two small scalp wounds, slight concussion, and a bruised shoulder. I saw him in a room outside the county court where his case was to be heard, in the presence of his own solicitor and doctor. He complained of inability to use the shoulder, and of complete loss of sight, and was led about by his wife, limping along and making a truly piteous picture. I got him to strip in order that I might examine the shoulder, and found that he had slight osteoarthritis in many of his joints. To test his sight roughly I asked him to pick up a wax vesta from the stained floor. He groped about for some time all round it, but failed to find it. I then told him to dress, and meanwhile pushed a black safety pin he had been wearing off the table on to the black floor. He proceeded with his toilet, and presently, quite innocently, stooped down and picked up the black pin from the dark floor without the least hesitation. When my evidence was heard, his doctor suggested to the cross-examining counsel to ask me why I had not examined with the ophthalmoscope for evidence of optic neuritis or atrophy! However, my account of the incident referred to, confirmed as it was by other witnesses, was sufficient to convince the judge, and the case terminated in judgement for the defendants."

The adoption of a few simple ruses similar to those which we have described ought to enable the practitioner to detect many frauds and impositions. It is possible that some day the Compensation Act will be amended so as to visit the perpetrators of these frauds with severe penalties.

INCOME TAX ON EARNED INCOMES.

WE think it well to draw the special attention of our readers to the fact that the time within which a claim to be assessed to income tax at the lower rates applicable to earned income may be made for the year 1910–11 expires at the end of this month. The law requires that such claims should be made before September 30th in each year—a time limit that is rigidly adhered to, except in so far as it is, we believe, the practice to admit claims made on the last day of the month. Unless the title to relief on earned income be established in due time, income tax will be charged at the full rate of 1s. 2d. in the £, instead of at 9d. or 1s. respectively, where the total income of the individual from all sources does not exceed £2,000, or is more than £2,000 but does not exceed £3,000. In the ordinary course the claim to be assessed at the appropriate rate on earned income will have been preferred on the usual form at the time the income tax return for the current year was made; but if this was not done, it will be well to apply to the local surveyor of taxes at once for the necessary form of declaration. If it should be found impracticable to complete the declaration by September 30th, on account of the requisite information not being available, a formal notice of claim should be sent to the surveyor, with a statement that the declaration of total income will follow as soon as possible. For the purpose of this claim, the income of an individual from all sources does not mean the gross income, but the amount of his income as assessable for income tax, computed, so far as professional profits are concerned, in the manner explained in the JOURNAL of April 23rd, 1910. Moreover, the total income from all sources is arrived at after deducting from the sums assessable for income tax any annual payments made for interest, annuities, ground rents, or similar matters. In the case of partnerships it is to be observed that it is not the amount of the income of the partnership that determines the title to claim relief but the extent of the total income of the individual partner. Thus it is possible for the share of one partner to be charged at the rate of 9d. and for the share of the other to be charged at 1s. 2d., although there be only one assessment on the joint profits. In connexion with earned incomes, it may not be out of place to refer to assessments on fees from appointments. We are glad to be able to state that as the result of the suggestions made in the JOURNAL of July 2nd, the Board of Inland Revenue have informed their surveyors of taxes that medical practitioners who are in general practice may be allowed to include their receipts from appointments in the general return of their profits made under Schedule D of the income tax. Hitherto it has been necessary for separate returns to be made with a view to a separate assessment for each appointment held, and the change in the method of assessment now made will go far to simplify the calculations to be made by the practitioner in compiling his annual return. For the current year, we understand, the assessments will be made on the returns already sent in, unless an application is received by the Surveyor of Taxes to be permitted to substitute an amended return before the assessments are made. Such a notice should contain a list of the appointments the emoluments of which it is desired should be included in the general assessment made on the average of the profits of the past three years. It may be remarked that it will still be open to a medical man who prefers to make separate returns for his appointments to do so, and this course would recommend itself to one whose present receipts from appointments are less than on the average of the three years 1907, 1908, and 1909. On the other hand, when the new basis is adopted, the Revenue authorities will presumably require that all future returns shall be made consistently on the same lines to include the profits of all appointments held during the preceding three years.

DELEGATION OF DUTIES OF CORONERS.

WE have received a copy of a provincial daily paper in which an account is given of the proceedings of a county council at a recent meeting, when the chairman informed the members present that he had received a communication from a gentleman of position with relation to the death of a man 70 years of age who had died suddenly. As the doctor declined to give the usual death certificate, the case had subsequently been brought to the notice of the coroner, who was reported to have sent a certificate to the local police officer with instructions to the effect that if he thought there were circumstances calling for an inquiry he should let him (the coroner) know. This certificate the policeman appears to have handed to the relatives of the deceased, and the body was then buried without an inquest and without the cause of death having been ascertained. The writer went on to say that he held the opinion strongly that the coroner had no power to delegate authority to the policeman to decide whether an inquest ought to be held or not, and he considered that the Joint Committee of the County Council ought to be asked to consider the matter, and to issue instructions to the police not to undertake such responsibilities in future cases. The Council decided to deal with the matter as suggested. It is curious that the question should have arisen, for, as is well known, one of the most common and important duties of a coroner is to decide whethe inquests shall be held. The task is always one of responsibility and often of difficulty, and to leave it to an individual policeman, or to any person other

than a legally appointed deputy, is a stultification of the law. The duty of police constables, when acting as coroners' officers, is no doubt to collect all such reasonable information as the coroner may require to enable him to decide as to whether he ought to order an inquest to be held, and then, having done this (so far as this stage of the case is concerned), the duty of the police is at an end.

NOVEL VACCINATION PROBLEM.

A PUBLIC vaccinator has been confronted with a curious problem presenting remarkable difficulties. The father of a child who had attained the age of 4 months, and whose name appeared on the public vaccinator's list, wrote to that official a letter in which he explained that he was not a conscientious objector to vaccination or he would have made the declaration against it. His wife, he explained, was an Italian, and desired to bring up the child in the manner followed in her own country, where the child would be vaccinated at the school age and not in early infancy. Anticipating the visit of the public vaccinator, the father desired to know if his wife's wish could be gratified. He concluded by writing: "My wife wished me to say that the child is *half* Italian, and if the English Government enforce vaccination they must undertake to confine the effects of vaccination to the English portion of the infant. She claims the protection of the Italian Consul for the Italian half of the boy." We are at a loss to know how the public vaccinator will be able to carry out the mother's strict injunctions in this case, which is more difficult than that which Solomon solved in so practical a fashion. We may add that this is not an American yarn, like Mark Twain's story of the dispute between a man and his father-in-law as to the milk of a cow in which they held equal shares.

TRAMWAYS.

THANKS to the London County Council the tramway car is, so to speak, always with us, just as, despite Mr. Sidney Webb, we have the poor. Indeed, there is a certain connexion between the two facts, the tramway being the carriage of those of us for whom the supertax has no terrors. They whirl us out to our suburban, if hardly rustic, residences in the evening, and bring us rapidly to work in the morning. They now, in short, play so important a part in the life of Londoners that everything connected with them is of interest. On this point it may be said that, while there have been improvements in administration during the last few years, a good deal remains to be done before tramways can be regarded as an unmixed blessing. They must always present the drawback of tending to reduce the walking capacity of the young men who form so large a proportion of the passengers carried; this is a point of some importance if these young men be regarded as facultative soldiers at some national crisis, and possibly also from the point of view of maintenance of national physique. Probably, too, the facilities they offer for avoiding exercise have a certain detrimental effect on the healthiness of the population in general. But these drawbacks are the inevitable outcome of the increased facilities for locomotion, which are the cause or the consequence of the desertion of London as a place of residence. On the other hand, there is no reason whatever why tramways, at any rate, should not balance the account by enabling even the poorest person to enjoy the advantage of fresh air. Indeed, a few years ago we pointed to the very valuable part which they seemed destined to play in this direction. Unfortunately, however, the cars introduced not very long ago are so built that instead of promoting the health of Londoners they must have the opposite effect. So far as the inside seats are concerned there is little room for criticism, but the arrangements made for what are ironically called "outside seats" are simply foolish. The chamber in which "outside" passengers have to sit is either stuffier than a tenement dwelling or one in comparison with which the Cave of the Whirling Winds must have been a place of breathless calm. On a wet day the ventilation is not sufficient for cigarette smoke to escape, and on a fine day the draughts are of so searching a nature that the London County Council, through its Tramway Department, must already have been the cause of many deaths and more illnesses among its ratepayers and those of surrounding boroughs. This is no evidence of lack of physique on the part of the victims, for while fresh air is good for every one, draughts are exceedingly dangerous, even to those possessed of the strongest constitutions. The first duty, no doubt, of the coach builders of the London County Council is to ensure that the tramways can pay by providing plenty of room, and the provision of a place for smoking is also an advantage; but it can hardly be beyond their ingenuity to enable the top to play a third and equally important part—that of enabling workers in London, if they will, to pass the time necessarily spent in getting from and to their homes in healthful circumstances. There are thousands of passengers who would prefer a really "outside" journey at all times of the year, for it is never so windy and rarely so wet as to make this course unpleasant provided the seats are dry. To enable them to do this would be quite easy if the carriage builders of the London County Council only covered in half the tops of the tramways and adopted a device to be seen, for instance, on Bristol tramways. They would still have plenty of room for passengers who like closed vehicles. The device in question is one by which the seats are made completely reversible, upper and under surfaces being identical.

A NEW SANATORIUM DEVELOPMENT.

AN institution, to be known as the Arthur Boyd Memorial Sanatorium, was formally declared open at Little Baddow, in the County of Essex, on September 13th. It constitutes in its way a new development in the antituberculosis campaign, and one which is initially due to the energies of Dr. Arthur Lyster of that neighbourhood. It is clearly impossible in small, scattered rural districts to make provision for the treatment of cases of tuberculosis at sanatoriums on the lines which have been followed, and are still being followed, in connexion with thickly-populated centres. Moreover, from the very beginning doubt has been cast on the supposition that in sanatorium work buildings of an elaborate kind are necessary. The fashion in this respect was set by the Midhurst Sanatorium, the circumstances of the creation of which naturally attracted great attention. At that time regret was expressed in these columns that the capital outlay for each bed provided should have been so high, and it was indicated that if such expenditure were really necessary, the chances of an adequate number of sanatoriums being provided throughout the country was exceedingly small. There is now hardly any dispute that the arrangements which must be made in order to secure the success of sanatorium work need not necessarily be of an elaborate character; and, developing this idea, Dr. Lyster has seemingly cut the needs, so to speak, down to the bone. The new undertaking in his neighbourhood has been provided at a total cost, we understand, of not more than £25 a bed; and that this sum is sufficient would seem to be

proved by what has already been done. At the Boyd Home itself twenty-one patients have been under treatment for a total of 355 weeks, or an average of almost seventeen weeks; each has paid a sum of 30s. a week, out of which £1 has been handed to the matron for their keep, and the balance of 10s. spent in payment of medical attendance, washing, newspapers, and various small needs outside actual necessities. Beyond this, with the assistance of the Great Baddow Tuberculosis Committee, which was early formed, the same general idea has been in general operation, inexpensive shelters having been built and lent to people in the surrounding villages for use in their gardens. Many persons in an early stage of tuberculosis, we understand, have been using these shelters at night and engaging in their ordinary occupations by day. The further progress of this movement will be watched with much interest, for it is clear that if in a year or so the results are still satisfactory, a way will have been revealed of immensely lessening the financial difficulties of dealing with tuberculosis effectively in this country.

MAJOR FARMAR-BRINGHURST.

READERS will probably remember that early in the summer a coroner's jury in Surrey brought a verdict of manslaughter against a retired officer of the Army Medical Staff, the general ground thereof being that he had directly and indirectly contributed to hasten his wife's death. As a consequence of this verdict he was committed to prison and the case remitted for trial at the Guildford Assizes. The Grand Jury, however, at once threw out the bill, and when the case was afterwards mentioned in connexion with the coroner's warrant the Lord Chief Justice directed the jury to return a verdict of Not Guilty, adding that there was no evidence which would justify the defendant being put upon trial. This result, though in itself satisfactory, was in a measure unfortunate, since it deprived the officer in question, Major Farmar-Bringhurst, of an opportunity of securing for his answer to the charge a publicity equal to that which the inquest had received. In view of this circumstance he has since published in the local press the material which would have been used in his defence. A copy has reached our hands, and a perusal of the statements made and of the various documents set forth confirms the impression created by the Grand Jury's treatment of the matter and by the subsequent remarks made thereon by the Lord Chief Justice, and, indeed, by the accounts previously published of the proceedings at the inquest. Into details of the history disclosed it is unnecessary to enter; they are precisely of the character likely to be anticipated by any medical man who has ever been intimately conversant with the tragic struggles involved when a husband with a certain position to maintain endeavours to deal single-handed with the social and other difficulties created by narcomania and alcoholic habits in a wife. It need merely be noted that letters received by Major Farmar-Bringhurst when in prison pending trial make it clear that his position was not, as he supposed, unknown except to one or two medical men under whose treatment his wife had been. The fact that the unfortunate lady concerned in the case was killing herself by her habits had been observed by casual acquaintances. But this circumstance, too, is a common feature of such cases. In some degree, perhaps, the fashion in which Major Farmar-Bringhurst met some of his difficulties was unwise, but the unwisdom was by no means of a discreditable kind. It lay in turning away from the course which greater consideration for his own interests might have dictated, and in giving way to his wife's wishes that nothing should be done which would increase the chances of her illness and the habits connected with it becoming locally known. For the rest, readers of this JOURNAL scarcely need be reminded of the fashion in which inquests in the country are conducted, and of the preposterous fashion in which coroners' juries frequently launch charges against individuals. This is so well known that unless an inquest verdict or rider has been tested and found true by independent authorities, neither the one nor the other can be regarded as importing the least stigma against the character of any individual. Nevertheless, they are exceedingly annoying, and often do a great deal of harm, and on this ground and those already indicated, Major Farmar-Bringhurst has our full sympathy.

UPRIGHT OR OBLIQUE WRITING.

THE minds of our French colleagues would appear to be greatly exercised with regard to the relative hygienic importance of upright and oblique writing. Some maintain that the so-called English style or slanting caligraphy has a most deleterious effect upon both the frame and the eyes of the scholar, while the opposing camp declare that the posture necessary for upright writing is harmful and that adopted for slanting is good. Cohen in Germany, and Javal in Paris, pointed out the connexion between myopia and excessive study, and many orthopaedic experts have insisted on the lifelong harm which may accrue to a child who is allowed to write in a false position. Ellinger in 1877 and Gross in 1878 advised an alteration in the desks and in the position of the copybooks, and also that the slope of the letters should be reduced. Schubert in 1880 advised a return to upright writing as a remedy for the evils which had been traced to improper positions taken by children in writing at school. The matter was taken up by the Government, and a commission was formed at Paris in 1881 which pronounced in favour of upright writing. In 1891 the Paris Ophthalmological Society discussed the relations which existed between school work and myopia. The society advised, among other things, that upright writing be taught in place of sloped writing. In 1906 a league of upright writing was formed, initiated by Buisson, Laviose, Jainl, and Robguin. But in 1908 Drs. Pechin and Ducroquet presented a paper to the French Ophthalmological Society, in which they sought to prove that sloped writing was better for the pupil than upright. They stated that upright writing was more fatiguing to the child than slanted writing, and that it postulated a false position at the desk. They therefore recommended that this sloped writing be taught in the Government schools. The latest paper on the subject is communicated to the *Recueil d'ophtalmologie* for January, 1910. It approves the original conclusion of the society in question and opposes that of Pechin and Ducroquet. These authors furnished diagrams of children writing upright characters with one shoulder higher than the other and with manifest curves in the spine. Other pictures showed children engaged in sloping writing sitting square, with straight backs, and shoulders at the same height. Beauvois, the author of the new paper has similar pictures, only reversed. The deformed children are engaged in sloped writing, those who are writing in the upright style are drawn in a correct posture! Pechin and Ducroquet would appear to recommend not only that the letters be sloped, but that the paper be placed obliquely on the desk, with the top deflected to the left. If the paper be so placed and, the right elbow be rested upon the table, both elbows take the weight of the body,

and each line is written by the hand describing a circle from the elbow as centre. This method is, the authors state, the natural one and the least fatiguing. There can be little doubt that this oblique position of the paper is more comfortable for the ordinary adult, but the same need not apply to the infant. Beauvois points out that there is an essential difference between adult and infant writing, due not only to the variation in size, but also to the greater muscular co-ordination of the adult. As he says, a child rather "draws" his letters than writes. It is a little difficult to see why straight writing should necessitate a different position from sloped writing. It would almost appear that both types are consistent with a perfectly correct attitude. Neither of the authors has studied the problem of reverse sloped letters. This might perhaps be even more salutary than upright writing! The chief point is that the child should be made to sit square to his work, and should have a desk of such a height that his eyes are neither too near nor too far from his work. Naturally errors of refraction should be corrected. Should all the weight be supported by the back, or should one or both elbows take a share? If the left elbow alone takes weight the left shoulder will tend to rise, and sclerosis will follow. If both elbows be placed on the table, and each take an equal share of the weight, the paper must be sloped. If much writing must be done a change of method is probably the best. First, the back may take all the weight, the paper being straight, then the elbows may take their share and the paper be sloped. The most cramped position is that which used to be inculcated by writing masters. The pen to point to the left shoulder, and the weight of the hands to be taken by the ring and little fingers alone. This method gives great flexibility, conduces to rapid method, but it is tiring, and quite impossible for children. At present several methods are in vogue; all are strongly supported by eminent authorities, but no one of them has been absolutely proved to be the best.

LEAD AND DUST IN POTTERY MANUFACTURE.

THE Departmental Committee appointed to inquire into the dangers attendant on the use of lead in the manufacture of earthenware and china has issued a second volume,[1] in which is gathered information from all sources, home and foreign, and which opens with a historical summary showing the progress of factory legislation in this country as applied to potteries. Although factory legislation was commenced in 1802, it was not until 1864 that it dealt with pottery manufacture, and then mainly with the limitation of hours of labour for children. Since then legislation has proceeded apace, special attention being directed to the subject of lead poisoning and means for the removal of dust. In a summary of the experimental work on plumbism by Dr. Glibert, Principal Medical Factory Inspector of Belgium, much interesting information is supplied in regard to the anaemia of lead workers. Several tables are published dealing with the incidence of lead poisoning in the various departments of pottery manufacture. In these tables is focussed all available statistical information. By the certifying factory surgeons of the pottery towns have been furnished short reports and tables in which the ages of affected workers are given, as well as their liability to particular types of plumbism. From Dr. Kenneth Goadby's treatise on lead poisoning long extracts have been taken in which the medical aspects of plumbism generally are discussed. In addition, experiments showing the solubility of the various lead salts in gastric juice are detailed, as well as those of a purely physiological character, some of which are likely to throw considerable light upon the more obscure problems connected with plumbism. Similar experiments as regards the solubilities of lead compounds in gastric juice and during mixed digestion are detailed by Mr. W. Thomason, F.I.C., which along with those already mentioned confirm the information previously supplied upon these points by Sir Edward Thorpe and Sir Thomas Oliver, members of the late Pottery Commission. Perhaps the most interesting information in the report is that supplied by Dr. George Reid, an abstract of which was given in the BRITISH MEDICAL JOURNAL of September 3rd, p. 646. Dr. Reid raises a very important question when he says that, without minimizing the gravity of the situation so far as lead poisoning is concerned, the mortality from this cause is a cipher compared with the deaths from phthisis and respiratory diseases—the death-rate from plumbism per 1,000 being 0.81 compared with 7.05. Another interesting and far-reaching problem which follows upon the previous question, and which is also raised by Dr. Reid, is that of compensation in cases of lung disease among potters. The problem bristles with difficulties. The regulations in use in the potteries of European countries are published at length and are of value from the point of view of comparison with our own. The volume closes with reports on systems of ventilation, by Mr. C. R. Pendock, His Majesty's Inspector of Factories, in which the various methods in use are criticized and improvements suggested. The two volumes supply most valuable information. They are the most complete reports relating to the hygiene of pottery manufacture in this or any other country. Sir Ernest Hatch, as chairman, not only gave himself unremittingly to the task he undertook, but succeeded in imbuing the members of the committee with a love for the work similar to that which animated himself and which is reflected in the excellent report issued by the committee.

[1] Report of the Departmental Committee appointed to Inquire into the Dangers attendant on the Use of Lead, etc., in the Manufacture of Earthenware and China. Vol. ii. Appendices. Wyman and Sons, Fetter Lane, E.C. Price 1s. 9d.

LUNACY LAW REFORM IN GUERNSEY.

IN the SUPPLEMENT of the BRITISH MEDICAL JOURNAL of September 3rd will be found an article on lunacy law reform in Guernsey, by Dr. Marcus H. Bulteel. In his article Dr. Bulteel refers to the report of a Special Commissioner of the JOURNAL, printed on June 2nd, 1906, and says justly that inasmuch as the report of the Special Commissioner pointed out so much that was defective in the law it seemed only fair that the great reform which has been brought about by the action of the Guernsey Division of the British Medical Association, with the cordial and enlightened co-operation of His Majesty's Procureur, Mr. E. C. Ozanne, should be made equally public. It should be recalled that the report of the Special Commissioner included both lunacy law and lunacy administration, both of which were found to be greatly defective. We are now glad to learn that the whole lunacy law of the bailiwick has been recodified and that amendments recommended by a committee of the Guernsey Division of the Association have helped to bring it into line with the excellent lunacy law of the sister isle of Jersey, or, subject to differences determined by local exigencies, with that of England and Wales. We therefore congratulate the Guernsey Division on the success which has attended its labours. At the same time much remains to be done. Before the time of our Special Commissioner's report a committee had been appointed by the States, and this committee presented majority and minority reports. Both were agreed that there should be

established a central asylum under a separate administration, thus doing away with the confusion of Poor Law and lunacy administration which then obtained and still, we gather, exists. "For financial and other reasons," Dr. Bulteel says, "the States have found themselves unable at the present time to enter upon the fresh outlay involved in such a scheme," and consequently the committee of the Division limited their efforts to reform of the law. For a description of the actual conditions under which insane persons, pauper and private, are treated in Guernsey we would refer those interested to the report of the Special Commissioner already referred to, and we can only hope that the Division, encouraged by its success in one department, will press for reform in the other.

PREGNANCY, SYPHILIS, AND SERUM-DIAGNOSIS.

SYPHILOGRAPHY has made great advances during the present century, especially in regard to its bacteriology and serum-diagnosis. The relation of syphilis to the death-rate of infants, and therefore to pregnancy, was discussed ages before these new discoveries were ever thought of. The bearing of these discoveries on such well-known evils as congenital syphilis and habitual abortion has, therefore, attracted the attention of obstetricians since Schaudinn showed that the *Spirochaeta pallida* was the specific micro-organism of syphilis, and since Wassermann, Neisser, and Bruck reported those experiments which led to the introduction of a serum-diagnostic reaction in syphilis regarded by them as specific. In the spring of 1908 Dr. Herbert Williamson and Dr. Eardley Holland reported, before the Obstetrical and Gynaecological Section of the Royal Society of Medicine, a case of intrauterine death of the fetus occurring in six consecutive pregnancies. There was no evidence of syphilis in the father or the mother. The patient was watched through her fifth pregnancy, and she was delivered prematurely of a stillborn child. Dr. E. Holland, working with the silver method, detected the spirochaetes in abundance in the child's liver and spleen. The mother once more became pregnant, and specific medicines were prescribed. The menstrual history was obscure; hydramnion was present. Labour was induced earlier than was compatible with the safety of the embryo, and living twins, a male and a female, were born, both under 4 lb. in weight. Neither lived many days, nor showed any syphilitic lesion. The liver and other viscera of the female twin were examined, but the spirochaete could not be detected. There was much discussion on this case, which admits of several interpretations. Another case of interest to the obstetrician was reported by Dr. Zacharias[1] quite recently. A syphilitic mother, aged 28, expelled a fleshy or haematic mole at the fifth month. It was of the bulk of a normal two months ovum and contained about 20 c.cm. of a pale yellow liquor amnii and a gelatinous body about half an inch long, the blighted ovum. It was examined in Professor Prochownik's clinic. The patient was put to the test and the Wassermann reaction was found to be well marked. On the other hand, the mole itself was carefully searched, but the spirochaete could not be detected. Zacharias urged the necessity of applying the serum to all mothers who were delivered of moles or aborted frequently. It is clear that the blood test and the bacteriological test for syphilis are likely to prove of great general value in obstetrics, but practitioners will be hardly likely to avail themselves of them freely until experts have simplified their methods and made them more certain. An interesting paper by a great authority on the general subject will be found in the proceedings of the Section of Dermatology in the early part of the present issue.

[1] "Eine Hämatommole." Meeting of the Hamburg Obstetrical Society. *Zentralbl. f. Gynäk.*, September 10th, 1910, p. 1221.

THE WEIR TRUST.

CONSIDERABLE sympathy must be felt with the governors of the Bolingbroke Hospital in the position in which they find themselves placed by the recent decision of the High Court with regard to the disposition of the estate left by the late Mr. Weir. As will be remembered, the trustees of this estate, with the authority of the Charity Commissioners, and in pursuance as was believed of the terms of the will, gave Bolingbroke Hospital £5,000 some two years ago for the purpose of extensions. As the latest decision of the High Court is to the effect that no part of the trust funds can rightly be devoted to work outside the limits of Streatham, the governors of the hospital have decided to hand back the sum in question. This step, however, will practically exhaust their funds and necessarily interfere with the well-being of an institution which does much good work for South-West London, and which is administered on lines more consonant with the true interests of the public than are those of most hospitals.

MUSCAE VOLITANTES.

SOONER or later almost every individual becomes conscious under certain circumstances of small shadows in his field of vision, the so-called muscae volitantes. The subject is of interest to every practitioner, for often in the case of a nervous or run-down patient these entoptic phenomena assume an importance often out of all proportion to their real significance. When an individual complains of seeing floating shadows like flies or strings of beads his refractive media should be carefully examined, for there may be an objective cause for his subjective sensations. There may be early cataract or floating opacities in the vitreous. The latter are common in eyes which are highly myopic. But in most cases the eye will be found to be absolutely normal. The patient has become cognisant of a purely physiological phenomenon. The vitreous is not a homogeneous clear jelly, but contains organized cellular elements, the relics of embryonic life, which throw faint shadows upon the retina. In the *Recueil d'ophtalmologie* for February, 1910, the subject is discussed by Scrini, who summarizes the literature of the subject. In 1707 Maître Jan studied the matter and ascribed the symptoms to a defect in some of the retinal fibres. Before his time, in 1690, the Jesuit Dechales suggested an explanation which was not far from the correct one. The phenomena were due, he said, to the projected shadows of certain corpuscles floating in the neighbourhood of the retina. But it was not until 1857 that Donders definitely showed that Dechales's view was correct. Before Donders many other incorrect explanations had been accepted. One of the very best accounts of entoptic phenomena has been given by J. Burdon-Cooper in the *Ophthalmic Review*, vol. xxvii, p. 357. He describes the usual ways of rendering the minute particles in the vitreous visible and delineates all the common figures. The best method is to remove the high power objective of a microscope from the nose-piece and place it upside down on the top of the eye-piece. If a beam of light be thrown through the condenser and the eye be placed close to the objective all the shadows thrown upon the retina are clearly visible and can be studied

in detail. The luminosity of the entoptic field can be varied by the iris diaphragm. This is important, for objects seen in the anterior part of the vitreous which are very indistinct when the field is bright, stand out in high relief when the illumination is diminished. A position for the condenser and diaphragm can be found which gives the maximum distinctness for any object under examination. Another effective method is to hold a small sphere of glass from 1 to 2 mm. in diameter close to the eye and between it and the source of light. This little device is easily made by fusing one end of a fine capillary glass tube until a small bead forms. By these simple methods any one can examine the vitreous contents of his own eye. If we carefully examine the refractive media of our patients with a small flat mirror with a +12 to +20 lens behind it and fail to detect any opacities in the lens or vitreous, we can assure them that the objects they can see are purely physiological and encourage them to cease to notice them.

RECENT OBSTETRICS AND GYNAECOLOGY.

WE have heard the work of a young and pushing specialist criticized with the remark, "He is a man who will always get a result." Experience does not invariably lead to a result; and the newest treatment is not always the best treatment. Drs. K. Franz, of Jena, and J. Veit, of Halle, have edited the first part of a new journal to which they have given the name of "Practical results of obstetrics and gynaecology,"[1] and which has provoked the reflection to which utterance has been given above. We know not how far it is matter of coincidence that all the contributors to this new journal should have sent in papers of the same kind, or how far each paper has been written to order in accordance with editorial instructions. We have in this country an excellent periodical, the *Journal of Obstetrics and Gynaecology of the British Empire*, which gives its readers from time to time what is there called a "critical review"—that is, a paper in which a young man of industry and ability, on the instructions of the editor, summarizes and criticizes the recent literature on some particular subject. It is not necessary, for the production of a good paper of this kind, that the writer should himself have done original work at the subject. These "critical reviews," like similar articles in the BRITISH MEDICAL JOURNAL, have, we have good reason to know, been most acceptable to, and valued highly by, readers. The papers which very instructively fill the pages of this new German periodical are all of the "critical review" class, but of a somewhat specialized type. The editors in their preface tell us that the German obstetrical and gynaecological papers at present in existence give the practitioner too much theory and too little practical information. These papers of "practical results in obstetrics and gynaecology," however, are collections of clinical experience—we hope we shall not be misunderstood if we say clinical experiments—and they have their value, especially to the teacher. But as to *results*—meaning by that some step forward taken, some definite fact attained that was not known before—well, we have not found it. The papers are records of attempts at progress—careful, laborious, honourable effort—but the result is very little. Here are the subjects: Extirpation of the uterus in puerperal fever; the artificial termination of pregnancy; the dietary of lying-in women and infants; the changes in the technique and indications of Caesarean section; the doctrine of endometritis in its practical effects; the principles of forceps delivery; cancer of the stomach in its relation to gynaecology and midwifery; the diagnosis and treatment of acute general puerperal peritonitis; prolapse and its treatment; puerperal haemorrhage and its treatment; practical results of serology in midwifery and gynaecology; contracted pelvis; lumbar anaesthesia; when ought both ovaries to be removed? disinfection in practice. A list of topics, it will be seen, offering plenty of variety, and all of them important in practice. The teacher of midwifery and gynaecology will find this volume of great use to him, informing him in a brief compass of the directions in which activity is manifest. But the general practitioner who takes it up expecting to be able to fill his pockets with so many additional pebbles to throw at disease will find himself disappointed. He will find suggestions of plenty of things that he may do, but scanty and indefinite information as to the effects that he may expect to follow his action. But it is, on the whole, a useful publication. Each subject is laboured with the thoroughness characteristic of the great nation to which the writers belong. Each paper represents the latest, if not the last, word upon its subject. We thank the editors for it.

[1] *Praktische Ergebnisse der Geburtshilfe und Gynäkologie.* Herausgegeben von K. Franz, Jena, und J. Veit, Halle. Erster Jahrgang, 1 Abtheilung. Wiesbaden: J. F. Bergmann; and Glasgow: F. Bauermeister. 1909. (Sup. roy. 8vo, pp. 297. Taf. I. 7s.)

THE presentation of the portraits of Professor Ogston to himself and to the University of Aberdeen will be made in the Portrait Gallery of Marischal College on Friday, October 14th, at 3.30 p.m., by the Right Honourable Robert Farquharson, M.D., of Finzean. All subscribers are invited to be present.

MANY of our readers may be glad to know that the Librarian of the British Medical Association is prepared to forward to any member on application the *Catalogue of Periodical Publications, including Hospital Reports and Transactions of Societies and Congresses*, which may be had on loan under conditions which are indicated at the beginning of the list.

THE annual dinner of the Edinburgh Graduates in the Midlands will be held at the Grand Hotel, Birmingham, on Thursday, October 6th, at 7.30 p.m., with Dr. Byrom Bramwell as the guest of the club. Any graduates desiring to be present should communicate with the Honorary Secretary, Mr. John T. Hewetson, 89, Cornwall Street, Birmingham, not later than October 4th. He will be glad to have the names and addresses of any Edinburgh gradates recently settled in the Midlands who have not received notices, so that they can be added to the list.

THE Fifth International Dairy Congress, which will be held in Stockholm in 1911, offers a prize of £20 for the best essay on the nutritive value of raw milk as compared with that of pasteurized, sterilized, or evaporated milk, determined, at least in part, by experiments made upon infants. In case the raw milk is found to give the better results, it is requested that the rôle played by the enzymes of the milk be determined if possible. The papers, which may be written in German, French, or English, and typewritten, should be sent before April 1st, 1911, to the Secrétariat-général de la Fédération internationale de Laiterie, 23 rue David Desvachez, Bruxelles, Belgium. The prize will be awarded by a jury of five to be chosen by the congress.

Scotland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

CLINICAL TEACHING IN THE SCOTTISH MEDICAL SCHOOLS.

PROFESSOR E. SIMS WOODHEAD, Cambridge, a member of the committee on the Scottish Universities, has added an interesting and valuable note to the committee's report on clinical teaching in the medical schools of Scotland. He points out that for a long time there has been difficulty in providing sufficient clinical material for the instruction of students at the Universities of Edinburgh and Glasgow. In Aberdeen, where there is an excellent medical school, this difficulty has not been felt; whilst in Dundee, with its splendid infirmary and 400 beds, the material is largely in excess of the needs of the comparatively small number of students in attendance. In Glasgow, under the new arrangement with the managers of the Royal Infirmary, and with a splendid new hospital for women at the disposal of the University authorities, the accommodation at the Western Infirmary (at which, in former years, the greater part of the teaching has been carried on) has now been largely supplemented, and the problem of supplying clinical material and teaching to the medical students attending the school has been solved. In Edinburgh, where, in proportion to the number of students attending the clinics, the accommodation in the Royal Infirmary is comparatively small, arrangements have recently been made to bring some of the clinical teachers, and with them the beds at their disposal, into closer touch with the service of the university. These changes have been attended with considerable success. Much more, however, might still be done in the utilization, not only of the in-patients, but of the out-patients, for clinical instruction in this school. The question, then, is in what directions, and by what means, a better and fuller utilization of (1) the available clinical material, and (2) the available teaching strength, seems to be possible. This twofold problem involved, at the outset, an examination of the relation existing between the University and the extramural school of medicine. The teachers in the extramural school were independent, a highly satisfactory state of affairs. The clinical teachers—university and extramural—controlled the whole of the clinical material that was required for the training of the medical student, and it was evident that the success of any competitive element among these teachers, as at present carried on, could only result in the unequal distribution of the students among the teachers, and, therefore, of the available clinical material among the students. If the reputation of the clinical teaching in the Edinburgh schools is to be raised, or even maintained, some modification of the present system is now desirable.

The problem, on its two sides, must first be illustrated by a review of the existing position of matters.

In the Royal Infirmary at the present time there are, roughly speaking, 900 beds at the disposal of the teachers. On the surgical side some 290 beds are set apart for the men, and 46 for the women students. Of the 290 beds, about 225 appear to be under the direct control of the two university professors and two surgeons who, under a recent arrangement, have been made University Lecturers in Clinical Surgery. Although these latter are University Lecturers in the Royal Infirmary, they are allowed if they wish to do so, to lecture on systematic surgery in the extramural medical school. Of the full surgeons one still remains an extramural lecturer in clinical surgery. These surgeons are assisted by five assistant surgeons, who go on duty when the surgeons are away, and attend to the out-patients, especially on receiving days. One of them takes charge of the "lock" wards, and one surgeon and one assistant surgeon take charge of the clinical instruction of the women students.

The beds set apart for general medical patients number from 310 to 330 available for instruction for the men, and 40 for the women, medical students. These beds are divided much more equally between the university and the extramural school than are those in the surgical wards. The three university professors of clinical medicine have control of about 140 beds, and the four extramural lecturers of about 170. None of these extramural physicians act as university lecturers, as do certain members of the staff on the surgical side of the hospital. Seven assistant physicians perform duties similar to those falling to the assistant surgeons. None of these assistants are called upon to do any clinical teaching except in the absence of one or other of the senior physicians, or in the observation ward or in the ward for delirium tremens patients. In the gynaecological ward (27 beds), to which men students are admitted, there is one full physician, with whom is associated an assistant physician. (The women are taught by one gynaecologist, who has 30 beds at his disposal, and has associated with him an assistant gynaecologist.) The special wards are allotted to: Skin diseases (one physician and two assistant physicians, with 22 beds, the physician being also a university lecturer); diseases of the eye (46 beds in charge of two surgeons and two assistant surgeons—one of each in the university and one of each in the extramural school); diseases of the ear and throat (30 beds in charge of two surgeons and two assistant surgeons—one of each in the university wards, and one of each on the extramural side). We have thus about 190 beds in these special departments in charge of five full surgeons or physicians, who can call on the services of six assistants. These latter, however, have no special teaching duties assigned to them. A medical electrician with an assistant, a pathologist with three assistants, and three tutors in clinical medicine, along with a tutor in clinical surgery and one in gynaecology, complete the infirmary teaching staff.

The students—university and extramural—by whom this material is to be used, number about 600—200 third-year students, 200 fourth-year students, and 200 senior or fifth-year students. There are thus 200 students of surgery to be taught on the patients in 336 beds—about 1.7 beds per student. In the senior surgical clinics about 100 students have to be provided for. If all the "full" surgeons were on duty at one time, each would have a following of 60 students. If the five assistant surgeons were regularly utilized in teaching, the number in each clinical class might be reduced to 30. In the medical wards (with, say, 310 beds, exclusive of those set apart for the teaching of women students) only slightly more material was available. If the students were equally divided among the seven full physicians, each would have a class of over 40. If the services of the assistant physicians were more fully utilized, this number might be brought down to 20—a much more manageable and satisfactory number to teach. An extension of tutorial work would considerably lighten the duties of those teaching in the clinical wards.

In the Royal Hospital for Sick Children there are 117 beds (42 surgical and 75 medical). Much of the material here collected might be utilized in clinical teaching, quite apart from the special instruction in diseases of children.

The number of beds in the City Fever Hospital was ample for the training of even a larger number of students than at present resorted to Edinburgh.

The material for the study of midwifery, though not large, has, says Professor Sims Woodhead, up to the present, been sufficient for the needs of the students who stay in Edinburgh to do this work.

A characteristic feature of the Edinburgh course of medical training is the "dispensary" work. Situated in various parts of the city are dispensaries where students, under the supervision of a physician or a surgeon, examine out-patients, prescribe for them, and also attend them in their own homes, treating them on their own responsibility, and in this way garnering much valuable experience of actual practice.

Out-patient work at present seems to be far too little utilized, not only in the Edinburgh hospitals, but in many of the other schools. In Edinburgh this is more serious from the fact that such a comparatively small number of ward beds are available. In the wards, of course, the student examines and writes a report on the condition of the patient, and goes carefully into and records every detail of the case in a way that would not be practicable with out-patients. In the surgical out-patients' room, however, under the supervision of the surgeon or his assistant, much of the work of ward examination and treatment might be largely supplemented. (More might also be done in the medical out-patient room, though not so much as on the surgical side.) It would, no doubt, be impossible to keep permanent records of anything except the more important features of the case, but a careful examination and treatment of three or four patients daily in the out-patient room, under proper supervision and guidance, would be of inestimable value to the student who has already been well grounded in clinical methods in the ward. Much of this work is often looked upon as being preliminary to ward work. It should, however, be supplementary or additional to it, as the student is not in a position to profit by it fully until he has gone through a systematic training on a few cases in the wards. From the facts above mentioned it is evident, as regards the first point in question—the distribu-

tion of material among the students—that there is not so much lack of material as a want of organization and full utilization of the material actually at the command of the teacher.

As to the second point—the utilization of the available supply of teachers—there is an unequal distribution of the students among the senior clinical teachers, and, along with this, there is undoubtedly a marked dearth of junior clinical teaching appointments. Without doubt the professors of systematic and clinical surgery and medicine in the University of Edinburgh have been greatly overworked both as regards clinical teaching and examinations. An attempt has been made on the surgical side to improve this condition by appointing two of the surgeons in the extra-mural wards to be extra-clinical lecturers, and there seems to be no reason why the whole of the physicians and surgeons, and assistant physicians and surgeons, and even some of the junior tutors, should not become university officials so far as their hospital work is concerned. Several of the lecturers, physicians, and surgeons might, in turn, act along with the professors, who might, when necessary, call to their aid, as assessors and assistant examiners, the assistant physicians and assistant surgeons. Similar duties and privileges might with equal advantage be extended to the senior members of the staff of the Royal Hospital for Sick Children, the Royal Maternity Hospital, the City Fever Hospital, and the Royal Morningside Asylum, where university teaching is already carried on by the members of the various staffs.

One great advantage of throwing further teaching responsibility on the assistant physicians and assistant surgeons would be that it would then be possible to divide the clinical students into junior and senior classes. At present a teacher in the wards is often handicapped; his teaching is either much above the heads of half his audience or much below the level of the other half, and cannot be satisfactory to either set of students. With an additional number of teachers available such overlapping, at present inevitable, might easily be avoided. The teaching might be made much more practical, as in smaller classes a far larger proportion of the men would be able to examine the patient without interfering with his comfort; moreover, as already mentioned, the out-patient work might then be made a regular part of the compulsory clinical work of the curriculum. Further, it has always been a tradition in the Edinburgh school—a tradition still kept alive—that certain of the assistant physicians should devote their time to the study of special branches of medicine, and there seems to be no reason why special clinics on diseases of the heart and diseases of the nervous, respiratory, haemopoietic, and other systems should not be carried on by some of the assistant physicians, thus greatly relieving, and at the same time supplementing, the work of the general wards.

In order to complete the co-ordination of clinical and pathological teaching in the Edinburgh Medical School the pathologist in the *post-mortem* department of the Royal Infirmary might well be appointed a lecturer on morbid anatomy under the professor of pathology, the other pathologists in the various hospitals being offered the status of assistants in the university whilst working in the hospitals, but allowed to hold practical or even systematic classes, not necessarily in the infirmary, but in the university, under the professor of pathology, or in the extramural school, as independent lecturers.

It should be an essential feature of the arrangement thus outlined that the classes of each of the senior members of the staff of the infirmary or of the Royal Hospital for Sick Children should be limited to, say, forty until the enrolments in each of the other classes should have reached a similar number. The classes of the assistant members of the staff might with advantage be limited to an even smaller number.

To attain all this it is obvious, says the report, that co-operation between the managers of the various hospitals is necessary. Then there was the financial aspect, and the establishment of a fee fund was suggested.

Lord Shaw on the Health of Students.

At the opening of a new school in Perth on August 29th, Lord Shaw of Dunfermline delivered an address on education, dealing specially with its effect on the health of students. Investigations, he said, had been going on regarding this question, particularly in Glasgow, and the revelations were distressing. The claims of a career were so strenuous that only the realities of life were attended to, and those in the training for professional men and women were bound to become hard and forbidding. The body of the student and his life were irregularly watched over. Students were forced to lodge away from home and its associations, in university centres, and often in circumstances which were a menace to health. He appealed for the institution of residential colleges in such centres, where orderly habits, good food, spacious healthy dwellings, and the happiness of social friendships could be made part of a dignified and well-ordered existence. The time was ripe for a better and upward change in this respect in Scotland if only means could be found to form a great central financial fund to give a commencement to the whole scheme. Everything was favourable. The universities were favourable, local committees were ready to be formed, and the Government, which paid out large sums annually, were deeply interested, in order to get the best possible return for the expenditure. From teachers and students so trained there would extend for generations of pupils a refining and elevating influence which would make its impress on rising nations of Scotsmen.

Glasgow University.

The number of entrants for preliminary and bursary examinations in Glasgow University, to be held from September 9th to 21st, are well up to last year's average. In the medical preliminary examinations the numbers are: English, 70; Latin, 72; Greek, 32; mathematics, 65; French, 60; German, 5; Gaelic, 3; Welsh, 1; and Arabic, 1. There is an increase in the number of bursary candidates as compared with last year.

The Care of Unfit Children in Glasgow.

The Glasgow Parish Council, at its meeting on September 6th, discussed a memorandum prepared by Mr. James R. Motion, the inspector, on the question of making some provision outside the institutions for unfit pauper children, so that they might be taught something suitable to their health and capacities. The class of children referred to had no future before them but residence in a hospital or a poorhouse, owing to their condition of health rendering them unable to earn a livelihood when discharged, or become in any way self-supporting. Boarding out does not meet the want felt in such cases, and the suggestion was made that some derelict mansion house, with ground attached, should be procured, where the children might be properly cared for, and taught knitting, weaving, canvas-work, basket-making, wood-carving, gardening, and fruit culture, etc. The chairman's committee, after consideration of the scheme, recommended its adoption, as the accommodation at Stobhill Hospital was not sufficient, and this class of children ought to be, as far as possible, removed from an institution with a poorhouse taint. The Council ultimately decided to agree to the proposal by a majority of 22 to 6. The proposal is a novel one, and its development will be watched with much interest. As the number of children is large, probably several such homes as suggested may have to be obtained.

The Scottish Chamber of Agriculture and Pure Milk.

A meeting of Directors of the Scottish Chamber of Agriculture took place at Glasgow on September 1st, when arangements were completed for the annual meeting and conference with Lord Carrington, Minister of Agriculture, on October 5th. Among the resolutions submitted for discussion at the conference was one dealing with the milk standard "to consider the operation of the Sale of Food and Drugs Act in relation to milk." A committee was appointed last May to go into the question and report, and this report was submitted. The committee was of opinion that the law

as to adulteration of milk should be strengthened so that the warranty defence would not be set up. Among other things they consider that it should be made an offence to have skimmed or separated milk in vessels not clearly indicating the nature of the contents; that it should be an offence for any dealer or his servant to mix milk with water or with skimmed milk unless it is not for sale; that a fixed standard of quality, namely, 3 per cent. of butter fat, and 8.5 per cent. of solids not fat, should be set up in place of the present limits on which a presumption of adulteration is raised; that officers of local authorities should have the same right of entry to premises of milk sellers as under the Butter and Margarine Act; and that powers should be given to the Board of Agriculture to prescribe methods by which a fair and average sample of milk be obtained. The committee considered that these changes would ensure a better milk supply, would discourage adulteration and the sale of poor milk, and would raise the tone of the business of milk distribution. The report of the committee is recommended to the conference for its approval.

PROPOSED JEWISH DISPENSARY IN GLASGOW.

A conference of representatives of the Jewish clergy and delegates from most of the Jewish congregations and institutions in Glasgow was held in the Herzl Hall on September 4th. The conference was convened by the Glasgow Jewish Hospital and Sick Visiting Association to consider a proposal for the establishment of a free Jewish dispensary on the south side of the city, and, if possible, a Jewish kitchen in connexion with one of the infirmaries. Mr. J. Fox, who presided, stated that not more than £250 would be required to finance the scheme. The Rev. L. Levine stated that Jewish dispensaries were to be found in Liverpool, Leeds, Birmingham, and Manchester, and that such a dispensary would be most desirable. Referring to the proposal to establish a Jewish kitchen in one of the infirmaries, he wished it to be understood that he was not complaining of the treatment of Jewish patients. He was a frequent visitor at the infirmaries, and he could say that the nurses and doctors treated them with great kindness. But many of the Jewish patients brought up from childhood to the strict dietary laws of the Hebrew faith found the strange diet a hindrance to recovery. A provisional committee was appointed to formulate a scheme for the dispensary, and to approach the directors of one of the infirmaries regarding a separate Jewish kitchen.

AIR PURIFICATION MOVEMENT IN GLASGOW.

The smoke abatement exhibition organized by the Corporation of Glasgow in pursuance of the air purification campaign was opened on September 16th by Lord Pentland, Secretary of State for Scotland. There was a large gathering at the opening ceremony, and the Lord Provost, in introducing Lord Pentland, referred to the objects of the exhibition and to the determination of the Corporation to leave nothing undone to make the city atmosphere sweeter and purer. Lord Pentland referred to the problem before the citizens as one concerning their health and working power, and while many obstacles must be overcome before the object was attained, the exhibition would show how great were the economies in their power if proper methods were used. The exhibition is the most complete and most comprehensive of its kind ever held in the country, occupying over 30,000 sq. ft. of floor space, and will remain open for three weeks. It is in three main divisions. One division illustrates the use of gas appliances for lighting, cooking, and heating; the second division is devoted to electrical appliances; while the third is intended to demonstrate the value of smokeless fuels, either in ordinary or special stoves. The Corporation gas and electrical departments have spared no pains to make the exhibition as complete as possible, and each of these departments has fitted up a special model house, fully equipped in the one case with gas appliances, in the other with electric fittings, for cooking and heating. The principal manufacturing firms in the United Kingdom have also collaborated to provide an interesting and instructive display.

MOTOR AMBULANCE WAGON FOR GLASGOW FEVER HOSPITAL.

The Corporation of Glasgow has completed arrangements for the supply of a motor ambulance wagon for the removal of cases to the City Fever Hospital. As this innovation is experimental, the new vehicle will be used solely for the conveyance of diphtheria patients, where speedy removal is always desirable and of great importance. Should the motor vehicle prove the advantage it is anticipated, several others will be added in place of the present horse-drawn vehicles.

GLASGOW AND THE TUBERCULOSIS EXHIBITION.

The Glasgow and District Branch of the National Association for the Prevention of Consumption have resolved to arrange for a visit of the Exhibition on Tuberculosis to Glasgow at the end of next month, and have asked that the exhibition be under the joint auspices of the Health Committee of the Corporation and the association. As the object of this exhibition is to educate the public and create increased interest in the work of preventing and treating tuberculous disease, and as popular lectures by eminent medical men are delivered during its course, the Corporation has remitted the matter to the Standing Subcommittee on the Prevention of Tuberculosis, with full powers to make any arrangement they consider fitting. The request of the Glasgow and District Branch will in all likelihood be acceded to, as the exhibition will further the aims of the Corporation subcommittee and bring its views prominently before the citizens of Glasgow.

ABERDEEN MEDICAL MEN AND OLDMILL POORHOUSE.

The medical men of Aberdeen by their refusal to apply for the vacant medical officership of the Oldmill Poorhouse at the salary offered, namely, £75, have forced the Parish Council to raise the salary to £105. The salary which the Aberdeen Branch of the British Medical Association suggested would be adequate remuneration for the services required was £150. At the meeting of the Parish Council on September 14th several proposals were before them, one proposition being that a resident medical officer be appointed at a salary of £250 with board; this found some support. Eventually it was agreed to advertise the vacancy at a salary of £100, with £5 for work under the Lunacy Act. At a meeting of the Aberdeen Branch held on September 16th, it was unanimously decided to adhere to the former resolution, which strongly recommended that no medical man should apply for the Parish Council appointment at a less salary than £150 per annum, which was considered the irreducible minimum.

NORTHERN INFIRMARY, INVERNESS.

The annual report for 1909 has just been issued; 755 cases were treated in the wards of the infirmary during the year, 170 cases were treated in the *x*-ray department, and separate applications to the number of 842 were given. There were several changes in the medical staff during the year. Dr. John MacDonald resigned as a member of the acting staff, and Dr. John W. Mackenzie was appointed in his place; Dr. Roberts has been appointed an assistant member, owing to the promotion of Dr. Mackenzie.

MEDICAL INSPECTION IN AYRSHIRE SCHOOLS.

Dr. C. R. Macdonald, in his first annual report on the medical inspection of school children in Ayrshire, just issued, states that in the 67 schools dealt with during the past year 3,666 routine cases and 1,034 special cases were attended to. In future, children at all the schools will be examined at three age periods at least—namely, (1) during the first year of school life, (2) at about 8 years of age, and (3) before leaving school. No arrangements have yet been made regarding the question of school nurses, but it will be impossible to obtain the full benefits of medical inspection without a staff of nurses to visit the homes of all children requiring attention. This might be done either by a special staff or by arrangement with local nursing associations. As to physical condition, the children examined compared favourably as to height and weight with the Anthropometric

Committee's standard for Great Britain. Although a large proportion of children were found with defects, these were generally of a minor character; for example, pediculosis of the head constituted about 25 per cent. of the defects discovered.

MEMORIAL TO DR. HAY.

The committee appointed to raise a fund to perpetuate the memory of the late Dr. Hay, of Leslie, have now handed over to the local nursing association the sum at its disposal, £115 2s. 10d., to be used for the benevolent and charitable branch of the association's operations, cases of dangerous and incurable diseases to have first consideration.

APPOINTMENTS OF MEDICAL INSPECTORS OF SCHOOLS.

Dr. Alex. G. Glass, Burnley, has been appointed medical inspector of schools for the united counties of Roxburgh and Selkirk. The commencing salary is £300 per annum; there were twenty-one applicants. Dr. G. Wishart M'Intosh, Kirkcaldy, has been appointed medical inspector of schools for Kirkcaldy.

GREENOCK AND THE TREATMENT OF PHTHISIS.

The subcommittee appointed by the Corporation of Greenock has decided to recommend that for the adequate carrying out of any scheme for the prevention or cure of phthisis an increase of one penny in the public health rate of the burgh would be advisable.

PERTH COUNTY FEVER HOSPITAL.

At a recent meeting of the Highland District Committee, held on September 3rd, a report was submitted from Dr. Graham, Medical Officer of Health of the county, to the effect that after the erection of Perth New Infirmary the agreement with the district committees would terminate. To alter and extend the county fever hospital would cost £2,500, the cost per patient per annum, including repayment of loan, being £9 12s. 6d. The hospital would contain 68 beds. The committee agreed to join with the other district committees in support of the proposal.

SIDLAW SANATORIUM.

At a meeting of the governors of Dundee Royal Infirmary it was stated that with the passing of the Provisional Order authorizing the transfer of the sanatorium and endowments to the infirmary directors the way was now open to an early resumption of work at the sanatorium.

WEST OF SCOTLAND CONVALESCENT SEASIDE HOMES.

The forty-first annual report of this most deserving institution states that on July 31st, 1909, there were 307 persons resident in the homes. During the succeeding twelve months 5,043 patients were admitted (exclusive of children under two years of age), 4,831 were restored to health, 189 relieved, 92 did not improve, 2 died, and 236 remained in the homes. These patients came from Glasgow and the West of Scotland, and a considerable number also came from the East of Scotland and the Border counties.

MOFFAT AND ITS BATHS.

An amusing discussion took place at the monthly meeting of Moffat Town Council on the question of the continuous loss in recent years in connexion with the mineral baths. During the last three years there has been a loss of £250, and for every bath taken by a visitor at 2s. it would appear that the ratepayers paid 5s. The income amounted to 3s. 6d. per diem and the upkeep cost the council 8s. per diem. One member blamed the doctors for sending patients past their own doors to Buxton and Harrogate; another advised that the baths should be done away with altogether, while a third advised the spending of £2,000 to £3,000 to improve them. It was argued that golf brought twenty people to Moffat for every one the baths brought. The discussion ended without any new move being taken in either direction.

HEALTH OF INVERNESS.

The annual report of the medical officer of health for the burgh of Inverness has just been issued. On the estimated population for the year, 24,000, there is a birth-rate of 21.041; this rate, as in other towns, has been gradually diminishing for the past ten years. The death-rate, 15.541, was the lowest for the past eight years. The infantile mortality-rate was lower than it has been for the past ten years—118—excepting 1904, when it was 103. More than half the deaths occurred within the first three months. Voluntary health visitors have been doing good work in the burgh, and possibly the visits paid by the ladies may have some influence on the infantile mortality-rate. There were only 78 cases of infectious disease notified during the year, but 37 deaths were registered as being due to pulmonary phthisis. Although voluntary notification is in force in the burgh, this measure has not been successful in furnishing much information as to the incidence of the disease. It is regrettable to notice from the report that no less than 96 parents took advantage of the conscientious objection clause with regard to vaccination. The remainder of the report deals with the different sanitary measures undertaken during the year.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

PROPOSED MEMORIAL TO KING EDWARD VII IN BELFAST.

A LARGE and influential public meeting, convened by the Lord Mayor, has been held in the Council Chamber, City Hall, Belfast, to consider what steps should be taken to establish in the city a memorial of His late Majesty King Edward VII.

The Lord Mayor, Councillor R. J. M'Mordie, M.A., presided, and the large chamber was filled; there were many apologies expressing great regret at being unable to attend, and expressing hearty co-operation and sympathy.

The Lord Mayor said he thought the opinion of those in the city was quite solid on the desirability of founding a memorial to the late King Edward VII. He was sure a wise choice would be made at that meeting as to what form it should take, and the citizens in Belfast, and those residing in the surrounding districts, would unite to do something which, if not worthy of a great name and a great ruler, would still be a credit to Belfast and its environs. He proposed:

> That this meeting of the citizens of Belfast, and of residents in the adjoining counties, heartily approve of the proposal to establish a memorial of His late beloved Majesty King Edward VII in the City of Belfast.

This was seconded by Mr. R. H. Reade, D.L., and carried unanimously, the whole meeting standing.

The Right Hon. Thomas Sinclair moved:

> That having regard to the unfailing interest taken by King Edward in all measures having for their object the relief of suffering and disease, and to the noteworthy work accomplished by him for the support of hospitals in the metropolis, this meeting resolves that the proposed memorial shall take the form of the erection and equipment of a much-needed additional building, to be called by His late Majesty's name and used for special medical and surgical as well as for administrative purposes, at the Royal Victoria Hospital, which is doing such noble work in the relief of disease for a wide district in Ulster.

Mr. Sinclair, in deeply sympathetic and loyal terms, referred to the leading characteristics of the late King, his compassion for the lives of the poor, and his measures for the alleviation of their sufferings. He reminded the audience that seven years ago His late Majesty himself visited their then new hospital, which they boasted was one of the finest in the kingdom. But already there was need for further development, and 64 beds were still unused for lack of funds; it was clear, then, that a new block which would again bring the institution abreast of the time, would be a fitting and becoming memorial to His late beloved Majesty. This was seconded by Mr. Robert Thompson, M.P., and supported by Sir John Byers, who said it was

necessary to take cognizance of the enormous advances that had been made in the medical and ancillary sciences; two of the most pressing wants were two new departments, one for radiology and one for vaccine-therapy. Radiology was of enormous value to the physician, the surgeon, and the specialist for diagnostic purposes, and of great value in the treatment of lupus and allied affections; their present accommodation had become hopelessly inadequate. Haematology and vaccine-therapy were found to help enormously in the recognition and treatment of infective and microbial forms of disease. These new departments would be amply housed in the ground floor of the proposed new block. Sir Otto Jaffe, Sir William Crawford and Mr. David Fleck (Chairman of the Working Men's Committee) also expressed their keen sympathy and strong approval of the shape the proposed memorial was to take.

The Very Rev. the Dean of Belfast then moved:

> That a subscription list be opened, with the Lord Mayor as treasurer (subscriptions being payable in three years' instalments if desired), and that an opportunity be given to all classes in the community to join in making the memorial worthy of its object.

This was seconded by the Rev. William Park and carried unanimously. Subscriptions promised were announced by Mr. Monypeny, the Lord Mayor's private secretary, to the amount of £7,975. The Vice-Chancellor of the Queen's University (Rev. Dr. Hamilton) then moved the appointment of a large committee to carry out the foregoing resolutions. Among the members of this committee are Sir John Byers, Sir William Whitla, Dr. Walton Browne, and Dr. R. J. Johnstone. He said that it was an interesting fact that the late King Edward was the only king who trod the streets of Belfast during a period of 220 years, and so far as the object which the meeting had approved was concerned they would, by adopting the scheme at once, attain a worthy memorial of the late King entirely in consonance with his own character, his aims, and his work, as well as one which for all time would go on doing good among the classes for whom King Edward specially cared—the diseased, the suffering, and the sorrowing. Captain the Hon. Arthur O'Neill, M.P., seconded the resolution, and it was passed unanimously.

County Longford Infirmary.

In August last the Committee of Management of the County Longford Infirmary decided to request their medical officer, Dr. Mayne, to hand in his resignation on or before September 1st, owing to the absence of harmony amongst those concerned in managing the institution, and on September 7th an adjourned meeting of the committee was held to consider his reply. Dr. Mayne stated that he did not see his way to accede to the committee's request, and that the want of harmony was in no way caused by him. His sole desire had always been to discharge his duties conscientiously, and to have the hospital utilized to the best advantage for the benefit and welfare of the sick poor. After considerable discussion the following resolution was proposed and passed by a majority of five votes against four:

> That in view of the fact that Dr. Mayne has not handed in his resignation, as requested to do so, on or before September 1st, 1910, to be received by the committee at their meeting on the 7th, we hereby dismiss him from the position of Surgeon of County Longford Infirmary, and require the Local Government Board, after a sworn inquiry, to assent to our order, the dismissal to take effect from date of assent of Local Government Board, as provided by Local Government Act, 1898; and that if the surgeon should think fit to hand in his resignation before above resolution becomes operative, that same be accepted, and that the surgeon be granted the maximum retiring allowance permitted by law.

In reply to this resolution the Local Government Board has stated that before the Board can consider the question of holding a sworn inquiry, a detailed statement of the charges preferred against Dr. Mayne must be submitted to it.

Sanatorium in County Galway.

A large house, with land attached, has been purchased by Mrs. F. Shawe Tayler, of co. Galway, and has been offered by her to the County Council as a fully-equipped sanatorium, on condition that the Council take it over and work it for incipient cases of consumption occurring in co. Galway. Reports on the house and on the situation have been forwarded by various medical men to the County Council, who will consider the offer at their next meeting.

Insanity in County Mayo.

At the last meeting of the Mayo Asylum Committee the annual report of Dr. Courtenay, lunacy inspector, was received. After referring to the great economy exercised in the management of the asylum, and eulogizing the careful superintendence of the medical officers the report refers to the great increase in the number of inmates in the asylum. In 1880 the institution contained 289 patients; in 1890, 387; in 1900, 610; and in 1910, 810. Although the committee had liberally striven to keep pace with the increasing numbers by adding to the original buildings, the number of patients had now increased to such an extent as to render the existing accommodation inadequate, and it would be necessary for the committee to consider how the additional necessary accommodation could be best provided. The report also advises the purchase of additional land for farm purposes.

Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

University Nursing Certificates.

THE Swansea guardians have decided to request the authorities of the University of Wales to take steps for holding an examination and issuing certificates for nursing.

The Movement in Wales against Consumption.

The proposal that the people of Wales should perpetuate the memory of the late King by instituting a national campaign for the elimination of consumption is making rapid progress. Mr. David Davies, M.P., has enlisted the sympathy and support of many eminent medical men, M.P.'s, and others of influence and title, and an outline of his scheme was recently given by him in an interview with a press representative. If the principle he advocates be adopted, he says it should be left to a committee of representatives of all the counties in Wales, with co-opted experts, to formulate a definite scheme, but he suggests that the campaign should consist in (1) educating the people by lectures, exhibitions, etc.; (2) forming local dispensaries, with trained nurses to look after the cases, and (3) erecting sanatoriums and homes. The cost he roughly estimated at from £250,000 to £300,000. "There is promised already towards the scheme," he added, "a sum of £132,000," from about seven people. On being further questioned Mr. Davies said:

> I cannot imagine any scheme which North and South Wales could better unite in supporting. Almost all the other schemes I have heard broached are parochial, or, at any rate, local. I think it would be a great mistake to start a lot of local memorials. If Wales is a nation, surely she can rise to the occasion, and have a national memorial. And what better memorial could we have than one to stamp out consumption? At present Wales is one of the blackest spots on the tuberculosis map of Great Britain.

Aberdare Council.

At the ordinary meeting of the Aberdare District Council held on September 12th the report of the Health Committee recommending closing orders in respect of a number of cellar-houses was considered. Some of these premises had been vacated, but the clerk suggested that the order should be made in all cases, as that would prevent their being reopened. A member asked if these houses were condemned on the report of the sanitary inspector alone, when the clerk

stated that the medical officer of health had reported on them to the Health Committee, and they had passed a resolution which the Council is now asked to confirm. Notice was given to all the owners to attend the August meeting, and they had not done so. It was further suggested that the Health Committee should in all cases visit the houses before condemning them, as great hardship was imposed on poor people by closing their dwellings. The order, however, was made.

CARDIFF SCHOOL CHILDREN.

Dr. E. Walford, School Medical Officer for Cardiff, has issued a report on the inspections he has made during the period April 4th to July 28th, 1910. The report shows that of the 2,969 boys and girls he examined, the majority were clean and well-clothed, but only 849 had sound teeth. Fifty of the children examined had disease of the heart, 18 disease of the lungs, and 6 disease of the nervous system. The number of children recommended for medical treatment (defective teeth and vision excluded) was 403, or 13.5 per cent., 4 per cent. being for tuberculosis. Of the 1,213 children who had had their eyes tested, over 960 had normal sight, the rest having more or less defective vision. For defects other than defective teeth and vision, 482 notices were sent to parents about their children, for defective vision 131 notices were sent, and for defective teeth 583 notices were sent. The summary of medical inspection of school children for the school year ending July, 1910, shows that the number of children inspected on school premises was 9,015, and the number referred for special examination and examined at the City Hall 1,181. The number recommended for medical treatment, exclusive of teeth and vision defects, was 1,270, or 14 per cent. Notices were sent to 1,349 parents, and 693 cases were followed up by school nurses. Only 6.5 per cent. of the cases reported to parents for defective teeth were attended to, 596 receiving no attention.

India.

[*FROM OUR SPECIAL CORRESPONDENT.*]

THE GRANT MEDICAL COLLEGE, BOMBAY.

THE report submitted by the principal, Lieutenant-Colonel H. P. Dymock, M.D., I.M.S., for the year 1909 indicates progress. Several important additions have been made to the building. The Sir William Moore operating theatre has been completed and is in use; likewise a lecture theatre, pathological and police-surgeons' laboratory and the coroner's court, refrigerating rooms for the anatomy department, and the students' hostel. The latter cost nearly 2½ lakhs of rupees and supplies a great want. A new physiological laboratory has been sanctioned, to cost about 1¾ lakhs. Several other wants are indicated by the principal in order to place the institution in harmony with recent advances in medical science and education. A sympathetic speech delivered by the Governor of Bombay, Colonel Sir George Sydenham Clarke, G.C.M.G., on the occasion of the distribution of prizes, makes it manifest that he will spare no effort to raise the Grant Medical College to the level of the best medical schools in Europe. The details of the working of the college exhibit success. The number of students on the rolls at the beginning of the year was 482 and at the close 518; of the latter, 68 were Christians (Europeans and Eurasians), 291 Hindus, 135 Parsees, 16 Mohammedans, and 8 Jews. The class of military medical pupils numbered 40. Ninety students left the college on completion of five years' course of study. Numerous changes occurred in the teaching staff during the year. This appears to be a regrettable circumstance, but is probably inevitable under present conditions. The retirement of Lieutenant-Colonel T. D. Collis Barry, I.M.S., Professor of Chemistry and Medical Jurisprudence, is recorded, with an expression of the esteem in which he was held by both colleagues and students. The fees received during the year amounted to Rs. 85,679.

THE BOMBAY BACTERIOLOGICAL LABORATORY.

This is the only laboratory in India in which anti-plague vaccine is made; and, in addition, it fulfils the purpose of a bacteriological laboratory for the Province of Bombay. The report for the year 1909, by the Director, Lieutenant-Colonel W. B. Bannerman, M.D., D.Sc., I.M.S., gives evidence of increased work in both capacities. The issue of vaccine amounted to 593,164 doses, an increase of 59,849 doses as compared with the previous year. No evidence of harm resulting from inoculation was obtained; on the other hand, a considerable mass of testimony in favour of its prophylactic value is recorded. The period of incubation in the flasks has been lengthened from two to four months in order to obtain a milder general and local reaction. Researches were conducted in the laboratory regarding pulicides and rat destroyers. During the year 91,540 rats were examined, of which 9,600 were found plague-infected. An interesting table is given showing the half-monthly mortality of plague in Bombay and the number of plague-infected rats discovered during the same periods. The rise and fall of the two series of figures correspond. The clinical work done in the laboratory includes bacteriological observations and examinations of neoplasms and fluids. Pathological researches were also conducted regarding rabies, snake venom, the preparation of antivenine, and cerebro-spinal meningitis. Serums of various kinds are prepared and stored, and sold to hospitals and practitioners for therapeutical trials. Medical men are received for instruction in the laboratory and courses of instruction for assistant surgeons are also held, with satisfactory result.

THE HEALTH OF THE CITY OF BOMBAY.

The year 1909 was a healthy one according to the elaborate and interesting report prepared by the Executive Health Officer, Dr. J. A. Turner, D.P.H. The birth-rate was 20.28, or, making allowance for unregistered births, 27.28. Considering that the percentage of women between the ages of 15 and 45 is 22, against 25 in England, the rate is a high one. Calculated on the number of women living between 15 and 45 years, the birth-rate of Bombay is 138, against 106 in England. The death-rate of the year was 35.66, against 39.13 in 1908. There were 16,569 fewer deaths than the average of the preceding decennium. There was also a marked improvement in infant mortality, the rate being 404 per 1,000 of registered births, against 450 in 1908. Dr. Turner details at considerable length the measures that are being taken to reduce this mortality by supplying skilled attendance on mothers, and helping them to better management of their infants. To this end it is proposed to erect a lying-in hospital for the poor with arrangements for teaching nursing to native midwives, to be supplied free. The chief causes of mortality in Bombay are respiratory diseases, plague, fevers, phthisis, diseases of the nervous system, and diarrhoea. There was a decrease under all these heads excepting phthisis, which showed a slight rise. Plague deaths were fewer than in any year since the introduction of the disease in 1896. Active measures are in operation to reduce the incidence of plague. The subject of malaria is also being carefully studied, and means are being adopted to obviate infection. There was a considerable rise in cholera deaths, due to repeated importation by pilgrims from Nasik. Although small-pox was less prevalent, the disease was on several occasions introduced by Mohammedan pilgrims, who are a continual menace to the health of the city. Sanitary administration is in an active and efficient state. Motor traction has been employed with advantage for the removal of rubbish. The Municipal Laboratory under Mr. B. P. Ghadially is doing good work.

Correspondence.

SANATORIUM TREATMENT OF TUBERCULOSIS.

SIR,—I am very sorry to have overlooked the fact that at the Westmorland Sanatorium a record is only kept of the *local* patients, and my sincere apologies are due to Dr. Paget-Tomlinson for this oversight. But with this admission my criticisms are, I think, perfectly correct from the statistical standpoint. Dr. Paget-Tomlinson himself writes in the BRITISH MEDICAL JOURNAL of July 23rd, 1910:

> It may here be stated that any sanatorium which does not report progress of cases for some years after discharge is guilty of a serious omission, and naturally lays itself open to grave criticism.

But he omits to report progress of two-thirds of the patients of even the two specially selected Classes A and B discharged from his sanatorium, and surely he must therefore to that extent be "guilty of serious omission." I have in my possession reports of more than 1,000 patients of *all grades of disease severity* discharged from a sanatorium which covers a far wider area than the Westmorland Sanatorium, and therefore the task of report is not impossible. The importance of it is, I think, manifest, because for a *general* mortality comparison it is needful to draw cases from a wide variety of occupations and environments, manufacturing and urban as well as rural.

And here we reach a second point: The general population dies of other diseases besides tuberculosis—heart disease, asthma, non-tuberculous complications—all such cases are deliberately excluded by Dr. Paget-Tomlinson from his record when they are associated with tuberculosis. Hence we cannot compare, on the basis of his statistics, the death-rate among the tuberculous with the general death-rate, for we should be comparing the deaths from one disease with the deaths of the population from every disease. All the knowledge we have from the old presanatorium days is that of the mortality of the tuberculous irrespective of the cause of their death. The tuberculous are as liable to other diseases as—perhaps more liable than—other persons, and the mortality returns which exclude all cases with non-tuberculous complications must clearly be misleading.

Dr. Paget-Tomlinson says that the shifting of all his Class B cases from the category of "moderate" to "severe" may sound rather an abrupt transition, but that when he dropped his Class C, or "consumption advanced," he changed his Class B to "severe," in accordance with Dr. Turban's classification. It is not quite clear to my mind whether he means his Class B to accord with Turban II or Turban III. I presume chiefly to Turban II, for his Class B is defined as "consolidation not extensive, no cavity, no high fever; tubercle bacilli commonly found." The bulk of Turban II fall into what other authorities term "moderately advanced." The bulk of Turban III falls into "far advanced." It is difficult to understand why Dr. Paget-Tomlinson has called those cases "severe" which fall into the "moderately advanced" of other authorities or of his own earlier classification. In the *Report*, 1910, Dr. Paget-Tomlinson tells us (p. 3) that the detailed tables are now confined rigidly to those admitted from Westmorland, and that all are included, "provided they remained in the sanatorium at least one month, provided they were not of the very advanced type suitable for only a home, and provided they were not also suffering from some non-tuberculous ailment, like heart disease, which masked the tuberculous affection." Does the Westmorland public, does the layman who is asked to contribute to an extensive system of sanatoriums, understand that 48 per cent. of the cases received (see *Report*, 1905)—practically one-half of the patients sent to sanatoriums and received there—are not likely to be benefited by the treatment, and are so hopeless as to be excluded from the record of after-histories? Will not any one of those 48 per cent. imagine himself to have the "severe" consumption which Dr. Paget-Tomlinson tells us covers a class of persons who after discharge are "in excellent health" in 60 per cent. of cases? Would it not be fairer to tell the public straight away that in nearly 50 per cent. of cases received at the sanatorium nothing can be done, and that only in the cases, where the consolidation is not extensive and there is no cavity and no high fever, 68 per cent. may hope to be alive after five to nine years?

And how does even this death-rate of 32 per cent. of those discharged from the Westmorland Sanatorium at least five years and not more than nine years ago compare with results elsewhere and with results of presanatorium days? Elderton and Perry[1] show that, according to Roepke's data for Turban II, 14 per cent. were dead four and a half years after discharge, and for Turban III 29 per cent. were dead four and a half years after discharge. Assuming that Turban III is equivalent to a lengthened period since Stage II, Dr. Paget-Tomlinson's Turban II results with 32 per cent. of deaths on an average of a little more than seven years' discharge, do not seem to be very much better or worse than the Friedrichsheim statistics, and this notwithstanding the fact that Roepke apparently includes *all* patients discharged. Dr. Noel Bardswell in his "moderately advanced" cases, which, according to Dr. Paget-Tomlinson, correspond to his Class B, got 13 per cent. of deaths in the five to nine years groups, a considerably less number than Dr. Paget-Tomlinson, but both are, of course, liable to modification if the age distribution, which there is no reason to suppose, were very different.

Dr. Paget-Tomlinson says that the 18 cases which I referred to as disappearing between the 1905 and 1910 reports from the records would better his percentage. It is certainly unfortunate that the three omissions I was able to trace were all *deaths*, and in the only case I was able to apply them raised the death-rate from 50 per cent. to 56 per cent. But since they were recorded in 1905 they belong to the five to nine years since discharge classes on which Dr. Paget-Tomlinson laid special stress in his letter of July 23rd; and let us suppose, which appears exceedingly improbable, that only the three out of the eighteen which I was able to trace have died in the interval, then the 32 per cent. death-rate would be reduced to 28 per cent., a result not comparing favourably with Bardswell's 13 per cent. I lay no stress on this result, because it is not obtained by a method which allows for either age or social class. But it is this death-rate which Dr. Paget-Tomlinson used as an argument in his original letter. Thus it seems to me that whatever selection of cases to be recorded exists at the Westmorland Sanatorium—and such selection, even if it be a revision of classification, must make the statistician at the very least anxious—there is not a marked favourable difference between these results and those of other sanatoriums, a conclusion I stated in my letter in your issue of August 6th:

> My own impression is that *both* sets of statistics [Dr. Guy's and Dr. Paget-Tomlinson's], if treated by a uniform and genuinely actuarial process, will show practically *identical* results.

A further acquaintance with the nature of Dr. Paget-Tomlinson's data tends to confirm this opinion. Now Dr. Paget-Tomlinson tells us that his position with regard to the relative merits of sanatorium treatment and that of former days is not affected by his exclusions. I think it very seriously is, because it is difficult to obtain the same selected class of cases for actual comparison from presanatorium data. But, waiving this point, his results do not show, treated by his own method, any markedly favourable difference from those of other sanatoriums. It then remains to compare both against the "treatment of former days." *No such comparison is made anywhere by Dr. Paget-Tomlinson.* All he has done is to ask in his first letter for some assurance on good evidence that anything like such good results were obtained from the old methods. The onus of proof might be supposed to lie on him, but as he asks for an assurance I must refer him to Elderton and Perry's paper just issued, in which he will see that sanatorium results apparently strictly comparable with his own show a mortality which appears for the same class of cases in no way less than that of the old methods of treatment.

Your able and temperate leader, Sir, in the last issue of the JOURNAL, ought to emphasize the point that we need further knowledge before large schemes of combating tuberculosis are propounded, and immense sums of money

[1] *A Third Study of the Statistics of Pulmonary Tuberculosis: the Mortality of the Tuberculous and Sanatorium Treatment.* Dulau and Co.

demanded for putting them into execution. Sanatoriums undoubtedly help the non-tuberculous by teaching the tuberculous the social importance of sanatory behaviour, but their influence in lessening the mortality of the already tuberculous in a marked and appreciable manner is open to question. Nor, again, is the infectious nature of tuberculosis any answer to the statistical evidence put forward by myself and others as to the importance of the hereditary factor. We have only to note that Dr. Charles Goring found among criminals for tuberculosis a high relation between father and son, but scarcely any relation between husband and wife, and that I found in a different class twice the association between father and son that there is between husband and wife, to see that infection due to environment is not the only factor. The old view "that consumption could be inherited" was verbally inaccurate, but practically sound in that the constitution liable to tuberculosis is inherited, and, while the tubercle bacillus abounds, the hereditary factor must be, as actual statistics show, of the greatest importance. It is all the more to be regretted that in the recent crusade against consumption it should be thought necessary to assert that:

> We may now claim to have obtained certainty that this opinion [the unimportance of the heredity factor] is correct, and may declare with complete assurance that the children of consumptive parents are not born with the seeds of disease inherent in them, and differ from others, if at all, only in the greater risks of infection to which they are exposed by their surroundings (*Times* Leader, September 14th).

To "surroundings" must be added "and their hereditary constitution" to make this statement consonant with our existing knowledge, or a basis for practical action with regard to tuberculosis.

In the very interesting correspondence which has appeared in your pages we have had much personal opinion and many impressions. All these are of value, but what we need is rather the presentation of statistical material relating to heredity and relating to mortality. The only contributions to the latter are those of Dr. Guy and Dr. Paget-Tomlinson, and both these contributions seem to me to show that the case for sanatoriums as based on lessened mortality is not proven.—I am, etc.,

University College, London, W. C., Sept. 20th. KARL PEARSON.

SIR,—I have been much interested in reading the correspondence in your columns relative to sanatorium treatment. My interest has been further stimulated by the perusal of a brochure, just published by the Department of Applied Mathematics, University College, London, entitled, "A Third Study of the Statistics of Pulmonary Tuberculosis and Sanatorium Treatment," by Messrs. Elderton and Perry. The general conclusions arrived at would appear to be that cases of pulmonary tuberculosis are as well whether untreated or treated. This is somewhat disappointing to one who is engaged in this kind of work, and, when the unsatisfactory nature of all other kinds of treatment is considered, must be profoundly distressing to those who have had the misfortune to contract this serious disease.

There are, of course, many difficulties in the way of finding out the exact results of sanatorium treatment; but in an inquiry of this kind I think it would be well to give, first of all, a definition of what sanatorium treatment consists in. It is by no means uncommon to find what a few of us regard as the essentials of successful treatment practically omitted from the regimen of many sanatoriums. I should like to suggest to the authors another inquiry, one in which the wheat might be separated from the chaff; one where it might be discovered which were the harmful and which the useful parts of sanatorium treatment. For any line of inquiry tending to expose the errors into which we may have been led by too much enthusiasm would be really useful.

I should like, also, to suggest that, as Dr. Pollock and Dr. Williams were experts in the diagnosis of this condition, it is more than probable that they were vastly superior diagnosticians to the ordinary general practitioner of the present day.

Further, there should be no need to go to Dr. Pollock and Dr. Williams for statistics of presanatorium days; most of the tuberculous at present live in presanatorium days, since only an insignificant minority of present-day patients get the opportunity of going to a sanatorium.

No one knows better than a sanatorium doctor that pulmonary tuberculosis may exist for years, and all practitioners of age and experience know that some persons affected with the disease make a good recovery in spite of all adverse conditions. This fact has been well known and fully utilized by quacks for many years.

Further, so far as my experience goes, and I have resided in five different sanatoriums, the patients are "carefully selected," the result of the selection being, with a few notable exceptions, that we seldom get a case unless it is going wrong, cases that are apparently getting well not being sent to a sanatorium, though they often apply for admission after periods of apparent and fugitive improvement, when they have relapsed.

I see that some allowance is made for the presumed time the patient was ill before being admitted to the sanatorium, but I do not think this matter, which is all-important, is quite realized by the compiler of these statistics. I have at present in the sanatorium a man whose first symptoms appeared seventeen years since; it should surprise no one that even a sanatorium cannot restore to this man his breathing apparatus.

A short time ago I discharged on the same day four men—one had suffered from the disease for nine years, two for five years, and one for eighteen months before being admitted to the sanatorium, and the week following I discharged a woman who had been ill for five years before admission. Some of these had during the periods mentioned enjoyed a fair measure of health, and would have supplied excellent material for presanatorium statistics of longevity. Unfortunately it appears more than probable that they will be used for supplying post-sanatorium statistics of non-longevity, for they were all with one exception third stagers, and although much benefited it was impossible to supply them with new lungs.

One of the chief duties of a sanatorium is to prevent the formation of chronic invalids. A more fruitful inquiry would be to treat and leave untreated alternate cases, and then tabulate the results in two columns.

Fortunately, until the appearance of so much adverse criticism we were tending to get more suitable cases into the sanatorium; but after the publication of the statistics which I have mentioned—which, I am afraid, few except the initiated will understand at their true value, and which tend to be quoted loosely as facts—we are once more in danger of being where we began before any real effort was made to treat these patients, and the old *laissez-faire* method is likely to be continued for some years more.

At least the figures, so far as they go, tend to show the necessity of abandoning the position of cheerful optimism at present too often held with regard to early cases; when this position has been abandoned the doleful pessimism at present surrounding treatment may at last be removed. It should seem self-evident that when dealing with an infective and destructive lesion treatment should be commenced at once, and that instead of months the importance of days should be remembered when the question of treatment is being considered.

New Cumnock, Sept. 10th. EDWARD E. PREST.

SIR,—I have followed the correspondence on the sanatorium question with interest. The object in view in the modern developments of treatment of phthisis is surely to place the patient in such an environment that the antibacterial agencies of the blood can be stimulated to the highest possible degree of activity.

In a paper I read at the recent British Medical Congress, entitled "The Evolution of Racial Types of Europe, its Bearing on the Racial Factor in Disease" (not yet published in your report), I pointed out that sanatorium and "open-air" treatment of phthisis is at present applied in an empirical manner, and that if the patient's racial type or subtype be determined, and the conditions under which this type or subtype evolved be studied, we should then have something approaching a working principle in the climatic or environment treatment of phthisis.

The British people is mainly derived from two original types—the blonde dolichocephalic Nordic or Teutonic, and the brunette dolichocephalic Iberian or Mediterranean; there is also almost certainly a strain of the brachy-

cephalic Alpine. These three types evolved under radically different conditions, none of which is wholly comprehended in the present climate of our island. We are therefore in process of evolving a type or group of subtypes more or less perfectly adapted to existing conditions. It is when a patient of a given type or subtype gets into an environment overtaxing his powers of adaptation that trouble is likely to begin—a trouble often to be cured by restoring the patient to environmental conditions suited to his type.

As an illustration of my meaning, I will call attention to a passage in a paper by Sir William Bennett, in the June number of the *Practitioner* for this year, entitled "Some Points relating to Tuberculous Glands, mainly with Reference to Treatment." He remarks: "A child born at a seaside resort, who, some years after, whilst living in another place, developed tuberculosis of the cervical glands, was subjected without much benefit to every kind of treatment, including residence at several duly accredited seaside places, a high altitude, a sea voyage, etc. Finally, she was sent to the place of her nativity, with a benefit which was quite remarkable. I have seen similar cases in people born inland. It looks, in fact, very much as if there may be some peculiar relation between the health of individuals and the climate in which they are born."

Now, I would submit that the mere fact of their being born in a given climate does not connote that that climate is the most favourable for their recovery from disease; it may be quite the reverse, as in white children born in the tropics.

If, on the other hand, the physical type is the outcome of selection through many generations from the influence of local climatic and social conditions—a subtype, it may be, showing the mixed features of more than one of the primary ancestral races—then one can readily understand that a restoration to such conditions may rouse the latent powers of resistance, and effect a cure in such a disease as tuberculosis.

Herein, I am convinced, is the explanation why one patient benefits in the Alps in winter, another in Egypt, a third in the Riviera, a fourth on our own coasts or inland, or in their birthplace, according as they approximate to pure ancestral types or are examples of local subtypes. In my paper referred to above I have entered into the evolution of the original racial types which go to compose our nation. The evolution of the Jews, studied in the same light, is highly significant in regard to their special pathology, and the whole question of migration bristles with formidable problems.

It is, however, specially with regard to the treatment of phthisis that my letter is penned, and I submit that until the evolution of individual types is considered and applied, sanatorium and "open-air" treatment will continue to yield a large proportion of those disappointing cases familiar to the family practitioner.—I am, etc.,

Hampstead, Sept. 18th. J. S. MACKINTOSH.

SIR,—The treatment of phthisis in sanatoriums and the open-air treatment of phthisis are two widely different things, though frequently mentioned as though the terms were synonymous. In fact, the former necessarily includes the latter as part, and part only, of a whole which can only be successfully carried out in a sanatorium by men who devote their entire time to the patients under their care, and can watchfully observe and act on the rapid changes and varying symptoms as they occur.

Modesty, no doubt, has prevented the many able and experienced physicians who are working in this particular field from putting forward their claims as authorities on diseases of the lungs, but such indeed they are; and the advantage to the patient is inestimable of being under the care of men who are in a position to apply any appropriate form of treatment, as suited to the individual case, while amid the best hygienic surroundings day and night.

Dr. R. W. Allen says truly, "Success is gained by minute attention to details, by placing the patient under the best possible conditions, and by so keeping an open mind as to the influence of a course of specific treatment as to be prepared to modify it to suit the individual patient."

This excellent precept, I am convinced, can only be followed in a good sanatorium where the patient is under the constant and immediate supervision of an expert, amid healthy and well-regulated surroundings.—I am, etc.,

HORACE WILSON, M.B., B.S.Lond.

London, N.W., Sept. 18th.

SIR,—The treatment of tuberculosis is receiving a rather unusual amount of attention at the present time. May I venture to raise a question as to the soundness, or at least the usefulness, of the autoinoculation theory?

For some years sanatorium physicians, and others who have the special care of consumptives, have, I believe, relied largely on a system of graduated exercise to produce an inoculation of small doses of the patient's own particular brand of tuberculin; and have rejected, almost contemptuously, the idea of inoculation with any form of the commercially prepared article. Of course, I do not for a moment seek to deny that autoinoculation takes place. It furnishes a satisfactory explanation of the pyrexia met with in fairly advanced cases. But it is the so-called "exercise temperatures" which I venture to call in question. It is claimed that these are due to autoinoculations of tuberculin; that they therefore have a curative effect; and that they thus render any other tuberculin treatment unnecessary.

I know of no reason why the toxin absorbed from a patient's own tuberculous lesion should differ in its action from tuberculin injected by means of a hypodermic needle. Yet we know that small doses of tuberculin administered hypodermically either (*a*) produce no appreciable effect on the temperature; or (*b*) quickly induce immunity to similar doses; or (*c*) if in relatively too large doses, have a rapidly cumulative effect and eventuate in a very decided reaction, with ill effects which may last many weeks. Now, "exercise temperatures" do not show any of these phenomena. On the contrary, patients who every morning take their walks of four, six, or eight miles, according to their strength, show day after day much the same exercise temperatures (probably about 37.5° C.) There is no sign of any acquired immunity. All one notices is that as their legs grow stronger these people are able to walk farther. Again, in cases of a slightly more febrile type—people, for instance, who cannot walk a mile without a temperature of about 38° C.—any little excitement or mental effort or even standing for a few minutes will cause a rise of temperature. Is this also to be attributed to an autoinoculation? If so, one asks how is that brought about? and, once more, why does it not produce immunity, and how is it that the temperature rises and falls on these occasions so much more quickly than it would if it were due to a hypodermic dose of any kind of tuberculin preparation?

The explanation I would suggest for all these slight rises of temperature (including, of course and especially, the "exercise temperatures") is that they are due to fatigue toxins acting on a heat-controlling mechanism rendered unduly sensitive by the tuberculous toxins which are always circulating in the blood of consumptives. This seems to me to fit all the facts better than the usual interpretation. If this be so, then the graduated exercise, the importance of which is so much emphasized by sanatorium physicians, is only of use in so far as any regular exercise improves the general health; but as a factor in the specific treatment of phthisis it must be regarded as a broken reed.

At present, indeed, I believe that this autoinoculation theory is standing in the way of progress. For, even if the effect of exercise as regards the production of curative autoinoculations be not so mythical and valueless as I conceive it to be, it must surely be insignificant in comparison with the systematic intelligent use of suitable tuberculin preparations. It would be a thousand pities if any theory or prejudice were allowed to hinder any longer the proper use in this country of those valuable remedies which Koch has placed in our hands.—I am, etc.,

September 2nd. E. M.

SIR,—My friend, Dr. W. Collier, whom I erroneously (BRITISH MEDICAL JOURNAL, February, 1905) believed to be with me instead of against me *re* the open-air treatment of phthisis, asks me some questions which I will try to enlighten him upon.

Does Dr. Collier, or the advocates of this treatment, sleep in the cold, damp air themselves? I ask this

question because I have always contended, if cold, damp air is beneficial to consumptive patients, it must be more beneficial as a preventive of consumption, especially in those who are always running the risk of catching it.

Has Dr. Collier ever watched the effect of placing a consumptive patient in a cold, damp room with windows wide open and then placing the same patient in a room where there is a large wood fire burning, and where the windows have been opened for some time and then closed? It is a revelation.

Perhaps Dr. Collier will be convinced that cattle and birds have a deep-rooted instinct to avoid cold damp air by the following experiments. If you place a large shed in a field where there are cattle and divide it into four parts, you will always, in stormy weather, find the cattle in the leeward and warmest division; if you provide the same shelter for birds—north, east, south, and west of a house—you will find their instincts are the same as the cattle; and if you look for that intelligible anti-open-air-cure bird, the sparrow, on a cold, damp day, you will find him on the leeward and warmest side of a chimneystack. He will seldom leave this position, except for food, and certainly not at night.

I believe I had ample opportunities of forming an unbiassed, impartial opinion of the open-air cure long before it became the "sanatorium treatment," and from the hundreds of letters I have received through my writings in various papers on this subject, I have come to the conclusion long since, which is the same as "One Who Has Suffered" (BRITISH MEDICAL JOURNAL, September 17th, p. 819), that the curative powers of sanatoriums are absolutely imaginary. Why, therefore, torture these poor unfortunate victims by exposing them day and night to cold, damp air, which renders (in my opinion) their breathing more difficult and their cough more distressing. Apologizing for taking up so much valuable space,—I am, etc.,

September 18th. THOMAS DUTTON.

P.S.—Seaside places are always bad for consumptive patients, because the air is generally cold and damp, except for a few weeks in the summer.

SICKNESS AND INVALIDITY INSURANCE.

SIR,—Allow me to thank Dr. Bruce C. Kelly for his courteous rejoinder to my previous letter, and to reply to some of his arguments. It is a pleasure to note that Dr. Kelly, like so many, agrees to a unified State medical service as an ideal; but, after all, an ideal is of very little service unless we strive towards its realization, and it is for this reason that I regard the proposed State insurance and certain other proposals as temporary intermediate positions on the way towards an ideal unified national service.

Most of us appear to be closing our eyes, or at least keeping silence, with regard to what is the one real danger of the coming State insurance scheme, and that is that it shall fall into the hands of the hundreds of friendly societies. I have been reading certain effusions by leaders of these organizations in the lay press, and it is quite obvious that they do not want State intervention, and would wreck the scheme if they could; but, failing this, their earnest desire is to commandeer the whole scheme. If we now secure a unified national insurance system, worked directly by Government, we shall move forward; but if there is established only a system of subsidizing friendly societies, with compulsion on all wage-earners to join one or other of these organizations, we shall move backward. If we can arrange to do this class of work directly for Government, we shall smash up friendly societies once and for all. If the friendly societies bring off their *coup* and arrange to work the medical profession for Government under such a huge compulsory scheme, then they will have succeeded in smashing us once and for all. So let us see to it.

It is a curious coincidence that in the same issue of the JOURNAL in which Dr. Kelly proclaims my views regarding a national medical service to be a pure academic ideal there appears, on p. 808, under the very heading, "National Medical Service," an account of the preparations for establishing just such a service in Ireland. It there appears that the British Medical Association has granted £300, and the Irish Medical Association £200; these sums are to be used jointly "for the purpose of furthering the views of the Joint Committee of the British Medical Association and the Irish Medical Association relative to a State medical service being formed."

A most excellent scheme for this Irish National Medical Service has been drafted, as shown in the JOURNAL report, and every medical practitioner in Ireland is being circularized.

My countrymen evidently mean business in this matter, and I know many of them are most sanguine of success. Let their motto be that of a famous Irish regiment, "Faugh a Balloch," and the other countries may follow when they have "cleared the way."

Dr. Kelly, like a former critic, refers to my personal "happy position of security from danger" as a salaried university professor. May I be allowed to point out that it is towards such a "happy position of security" that I am trying my utmost to conduct my colleagues of the profession who admit, with Dr. Kelly, that "there exists in the profession to-day a feeling of insecurity." Well may there exist such a feeling to-day, and the haven of refuge is to belong to a strong, unified National Service. Surely a person who is himself in safety should best be able to help others to safety, and I fail to see why I should be gently sneered at on this account.

It is always easy to construct beautiful pitfalls and impossibilities against any scheme of reform; we have known them since the days of George Stevenson, and the railway, and the cow. The medical man with the total practice of £1,500 a year, of which £750 is derived from wage-earners and £750 from the wealthier classes, is a specimen of this *genus*. Such men do not represent 5 per cent. of the profession to begin with. What honest man could make £750 on working-class practice with the fees that rule at present, and yet find time to make another £750 on well-to-do practice?

The much more usual type of man is he who makes £450 out of working-class practice, with a wage limit of, say, £2 a week, and perhaps £50 additional out of wealthy patients.

One sees no good reason, if Government introduces a proper insurance scheme, why this man under an equitable supervision should not be paid £500 for carrying on the working-class part of his practice by Government and still be allowed facilities to attend for payment the few wealthy people in his neighbourhood who want to employ him. But, supposing this were not allowed, then each one of nine practitioners in a district could accept Government service at an average of £500 a year each, and each resign on an average £50 worth of wealthy-class practice; these nine amounts of £50, together with his own residue of wealthy-class practice, make an income of about £500 for the tenth man who elects to go on with private practice alone for the well-to-do, his previous working-class portion being distributed amongst the nine who have gone into State work.

In many districts in cities there would be practically no dislocation at all, and any small amount there would be would soon adjust itself. In sparsely-peopled country districts the wealthy would have to send or go to town, which would be no disadvantage to the profession.

Dr. Kelly's case is obviously easy of treatment on such lines as outlined above, and there would surely in a considerable town be only one such practitioner as he has postulated with £1,500 a year, and the man with £750 of wealthy-class practice is surely marked out as the man to continue to practise for the wealthy. Suppose seven other practitioners in the district elect to be State medical officers and become whole-timers, doing no work paid by fees, then from each of these seven, who would now amongst them rob the one private practitioner of his £750 worth of working-class practice, would come in return a contribution of such an amount that when the seven are added together the total amount of £750 would still be left undisturbed, and the one private practitioner would now make his £1,500 from private practice alone.

It is certain there would be some small ups and downs in income inevitable, but what reform has ever come without such movements, or what needed reform has long been delayed on account of them?

There are 32,000 medical practitioners in the whole United Kingdom, and if we take £250 as the average income (recent criticism has taught me to be generous) we obtain for the total income of the medical profession

£8,000,000. Now *a penny a week* from each of 12,000,000 workmen, a penny a week from each workman's employer, and a penny a week for each workman from the State (equivalent to £2,600,000 only), raises the sum of £7,800,000, and for this we can adequately attend to the whole working-class population, men, women and children, and leave only £200,000 to be made in private fees from the wealthy. Financially, the scheme for a unified National Medical Service is much lighter than the Old Age Pensions.—I am, etc.,

Birkenhead, Sept. 19th. BENJAMIN MOORE.

SIR,—I think that the thanks of the profession are due to Dr. Keay for his very interesting and lucid article on this subject in the JOURNAL of September 17th.

I think that it is desirable that any scheme should fulfil the following conditions:

1. It should be founded on an insurance basis, so that the healthy would compensate for the unhealthy.
2. It should be compulsory.
3. There should be a free choice of doctor from those on the list who are willing to serve.
4. There should be a wage limit.
5. It should be based on the principle of payment for work done.

The bone of contention will very likely centre round No. 5, but surely we can strike on some figure which would be acceptable to the whole profession. It may be urged, and, of course, with truth, that a scheme such as this would make us servants of the State. Well, personally, I would rather attend patients who are in receipt of under 20s. a week as a servant of the State, even at the rate of 1s. per visit, than under the present system by which the vast majority pay us nothing at all.

In reference to the scheme put forward by the British Medical Association, it would be quite unworkable in practice, especially in mining districts. Under it we would have to charge a miner one fee and a member of the artisan class another, which would lead to endless confusion and discontent. It surely should be obvious that if we want uniformity in anything it is in our contract practice. It is also obvious that the authors of the scheme cannot have studied the subject of State insurance, or they might have known that a system of collectors such as they propose is an utter impossibility.

We are quite in the dark as yet as to the exact form which the measure of sick insurance will take, but we may be certain, at any rate, that payment will be from and into a central fund. In conclusion, the great point for the medical profession is:

1. To know what they want; and
2. To be united in wanting it.—I am, etc.,

Newcastle-on-Tyne, Sept. 19th. W. SINCLAIR FRASER.

SIR,—I have read with much interest the articles and correspondence on State invalidity and sickness insurance. It is most instructive, and should be perused by every general practitioner. The lack of unity among doctors has been reiterated *ad nauseam*, and no doubt with a considerable amount of truth. But as this matter of State insurance hits us all, there is every reason why we should use all our efforts to see that we are not exploited, either by the Government or the general public.

There is one point upon which I think we shall all agree, and that is, that payment should be paid for work actually done. The carefully worked out table given by Dr. Fothergill on page 749 obviously proves this, although I should have thought that it was so obvious as to hardly require proof. I feel sure that nearly all men who are in general practice will recognize this.

Professor Moore takes a very complacent view of a unified State medical service; and, as Dr. Bruce Kelly points out, he considers that the capital a man has invested in a practice is of small account compared to the possibility of his getting a pension, supposing he lives long enough to get it. To my mind it is of paramount importance that this capital should be guarded, and that whatever assurance scheme is introduced we should endeavour on no account to accept one which will further reduce the already diminishing incomes of medical men.

There is an important point in any scheme that may be brought forward to provide medical attendance for the working classes, and that is this—there is a marked difference as regards practice in the town and in the country. The majority of a country practitioner's patients earn from 15s. to 20s. a week. A man earning 30s. a week is well off. Nearly all these are in clubs, but their wives and families are not. They are private patients, and most of them pay their bills, so they make up quite a large part of a country doctor's practice. I am perfectly aware that in a town practice the wives and families of men earning such wages as these could be regarded as a *quantité négligible* as far as private practice is concerned. Therefore, a scheme of insurance which would be suitable to a town practice might not necessarily be good for a country one. So that country doctors should bear this in mind.

I understand that the British Medical Association intend to interview Mr. Lloyd George, so as to see that the interests of the medical profession are well guarded in this new State scheme.

I cannot help thinking that the general opinion of the medical profession would be best obtained by a postal referendum, dividing the results into those obtained from country practitioners and those obtained from town ones.

It is somewhat puzzling for a man in busy practice to make out the different points brought forward by different writers and correspondents as regards this scheme, but there is one which, in my opinion, is of paramount importance, and that is the principle that we should be paid for work actually done, and not per head, as in the present club system.—I am, etc.,

Gillingham, Dorset, Sept. 19th. R. W. MORGAN, M.D.

SIR,—It is apparent that all your correspondents agree that our interests as a profession are threatened. They are also agreed that our difficulties might easily be solved if we were less apathetic and took a greater interest in medico-political matters. Let us candidly acknowledge that not only are we out for fees, but we intend to get them. *Now* is the time to *act*. Let me make a suggestion. Let us set apart a date for a meeting to be held in every Division to discuss this all-important question of State insurance. Let the secretary of each Division be supplied with the questions to be answered. Let the answers be sent up to the Association without delay. Then we should have the considered opinion of the profession, and it would be easy to know how best to act. I should also suggest that non-members of the Association be invited to these meetings, and after the meetings be invited to join the Association. Doubtless Government officials are now hard at work preparing their scheme. Let us have ours ready for the time when the question is introduced in Parliament.

It is time for us to cease expressing opinions and to deal with facts.—I am etc.,

Bedford, Sept. 19th. S. J. ROSS.

CONTRACT PRACTICE AND THE MEDICAL PROFESSION.

SIR,—The discussions upon State insurance and the exploitation of the medical profession have all turned upon the respective merits, or demerits, of the Majority or Minority Report of the Poor Law Commission. It has been assumed that by legislation one of these schemes will be later brought into operation, and that the medical practitioners all over the United Kingdom will have their charges for medical attendance fixed upon a certain scale. May I venture to suggest that no legislation can compel anything of the kind without the concurrence or apathy of those concerned; and that, unless medical men are foolish enough to agree to be so exploited, the regulation of their fees will still remain in their own hands? To place the State in a position generally to fix the fees for medical attendance will be so suicidal a policy for us that I cannot understand any one outside a lunatic asylum consenting to it. Contract practice as at present, however newly christened, should be steadily and persistently resisted; or, if amended, should be undertaken only at a remunerative rate. The State does not attempt to fix the price of provisions or the cost of mercantile articles, and there is not the slightest reason for its interference with respect to remuneration for medical attendance. Such remuneration should, apart

from attendance upon "paupers"—I hope this term will not offend any Socialist readers of the BRITISH MEDICAL JOURNAL—be based upon a scale suited to the financial position of the person requiring it, and in accordance with the usual conditions of supply and demand. At present, under contract practice, the yearly sum for medical attendance paid by the majority of the masses is less than the annual sum demanded by the State for a dog tax—in other words, more is paid for a dog than a doctor. The stupid and unbusinesslike policy of accepting contract practice at a low fee for the sake of obtaining an appointment and keeping another man out of it has caused infinite harm to our profession. United action on our part would soon raise the annual payment to a more remunerative sum, and such united action must be taken unless we desire to place ourselves in the position of bankrupts. To quote the letter of Dr. Brandligt, of Belgium, published in the JOURNAL of September 3rd:

> The end in view is not in any way the abolition of these benefit societies; they are required to adequately remunerate the profession for services rendered. . . . In such circumstances the inordinately large number of members of the insurance societies makes it impossible to give each of them the care necessary. This result is morally prejudicial to the profession in general.

To become a mere employee of the State in this respect will be to change one despotic master for another. The exigencies of the political party which initiates "State insurance" will make it necessary to leave the gates open for the admission of insurers as wide as possible, and the now paying middle class with numerous votes will take advantage of this and not permit themselves to be excluded, and such inclusion will further damage the "goodwill" of medical practices. The siren voices of Mrs. Sidney Webb and her Fabian colleagues have apparently dulled the senses of many medical politicians, and unless we wake up and realize the position which we are being led into, we shall be bound hand and foot as slaves, and be unable to extricate ourselves later. That some form of "mutual benefit" for those earning small incomes *re* medical aid is necessary is undoubted; but the "benefit" must be "mutual" and not all on the side of the patient. It would be a benefit to the consumer were the State to formulate a scheme to enable those of small means to buy the best tea at 2d. a pound, and meat in the same proportion; but I fancy if such a scheme were brought forward the butchers and the grocers would be sufficiently powerful to knock this method of pauperizing such traders on the head. Surely we are sufficiently powerful to put a stop to the long-continued exploitation of medical practitioners. The State does nothing for us as a profession: it affords us not the slightest protection in respect of our practice or titles. The Medical Acts, which the wisdom of our legislators have passed, are useless, except to give the most perfect safeguards to unqualified persons. The State heaps gratuitous work on us year after year, inflicts penalties upon us if we fail to carry out this unpaid work, and it now seeks to reduce our fees to a minimum. It is endeavouring to destroy without compensation the "goodwill" of our practices—a goodwill which, in many instances, has been amply paid for by us in the past at an estimated value, and which we hoped and believed would be an available asset at some future date when we desired to "realize" it.

It is for a united profession to say with no uncertain voice whether it will permit any further encroachments and interference; and whilst considering the position we may well remember the old statement—"if we do not hang together we may hang separately." It is better to be "out for fees" than "out of pocket."—I am, etc.,

London, W.C., Sept. 21st. A. G. BATEMAN.

THE NEW MIDWIVES BILL.

SIR,—I agree with Dr. Fothergill's letter, published in the JOURNAL of September 17th, p. 820; but I would much like to have the opinion of general practitioners on one point—namely, Is it to the advantage or is it just and right to the medical profession that medical men should for the sake of a small payment give their services as lecturers and teachers to nursing homes to train midwives, and thus enable them to compete with our profession? It is to my mind as wrong as it would be for a veterinary surgeon to train farriers how to treat animal diseases.—I am, etc.,

London, S.W., Sept. 19th. JAMES HAMILTON.

MIDWIVES AND MEDICAL PRACTITIONERS.

SIR,—I crave the favour of a little of your space to bring before the notice of my fellow practitioners the quaint manner in which the Midwives Act does its work—and the Central Midwives Board leaves its work undone.

An advertisement (which I transcribe—omitting names) of a nurse who carries on a maternity practice under the aegis of the Central Midwives Board has appeared weekly for many months in the local press of a certain London suburb.

> Nursing and Midwifery Institute ————. Patients supplied with midwife, monthly nurse, or visiting nurse. Inpatients taken, both general and maternity. *Attendance by doctor* or midwife, *fees arranged*, strictly moderate. Maternity club, Nurse ———, certified midwife.

I wish to draw special attention to the words italicized.

In addition to this advertisement a circular in similar terms has been issued broadcast throughout the neighbourhood in question.

When the matter was brought to the notice of the Central Midwives Board, their secretary replied that neither the advertisement nor the circular infringed the regulations of the Board.

It is therefore open to these women to advertise as much as they please—a fact which demonstrates the need of drastic revision both of the "regulations" and of the Board responsible for them.

Under the limitations imposed by the Act it is impossible for a midwife to carry on a considerable practice without the assistance of medical men. It is difficult to believe that the men who habitually assist this midwife and live in her immediate neighbourhood are ignorant of the nature of her advertisement.

In return for their complaisance the nurse's medical friends receive the benefit of her touting advertisement, in which she offers the services of a doctor. However one may deprecate their methods, it does not lay the men open to any action by the General Medical Council, as there is no direct evidence of a *financial* understanding between them and the advertising midwife. Apparently, therefore, under the present rules of the game, it is open to midwives to advertise themselves and their medical backers without laying either class open to any consequences whatever.

The gross unfairness of competition on these lines is obvious, and it behoves all honest practitioners to take such action as will make these rather dubious practices impossible.

With apologies for the length of my letter.—I am, etc.,

West Ealing, Sept. 16th. FRED. W. JAMES.

THE POOR LAW AND THE FALLING BIRTH-RATE.

SIR,—In reference to the discussions on the falling birth-rate and Poor Law reform, may I suggest that before any alteration is made in the Poor Law all tax-paying women should be represented in the House of Commons, and consideration be then given to the question of what should be the economic position of (*a*) the wife, (*b*) the mother, and (*c*) the widow. In discussing the Poor Law this question is never made clear.

Consider the following facts:

1. The Government offers women a lower scale of remuneration than it offers to men, and an attempt is made to justify this on the ground that men support women.

2. By the Factory Acts it is proposed to prevent the married women from being employed in profitable labour.

3. Lord Beauchamp has laid it down, "There was no obligation to send for the doctor. The midwife advised that the doctor should be sent for, but neither the midwife, the patient, nor the parent was obliged to accept that advice." One notes that the husband is not regarded as having any concern, let alone responsibility, in the case—unless by "the parent" is meant, not the patient's parent, but the unborn child's one and only legal parent. If Lord Beauchamp had in mind the husband when he talked of "the parent," it appears that in the eye of the

law the life of the mother is not worth even a passing thought.

5. In the BRITISH MEDICAL JOURNAL of September 17th "A Poor Law Medical Officer" writes:

> Women of the class whom Mrs. Webb's kind heart commiserates do not make provision for their confinements, but even in that case payment has for many years already been forthcoming from other sources—namely, the union.

The law seeks to place men in a privileged position economically on the ground that men support women. But when in her confinement the woman needs a doctor, the husband is under no legal obligation to provide for her; and it is she who is reproached by "Poor Law Medical Officer" with not having made provision for her confinement. Moreover, if the husband sends for a doctor but fails to provide the fee and the woman dies, coroner and jury censure—the doctor! and pity—the husband!

> Wherefore I praised the dead which are already dead more than the living which are yet alive; yea, better than they both is he which hath not yet been, who hath not seen the evil work that is done under the sun.

Yet there are those who are surprised at the falling birth-rate!—I am, etc,

Cardiff, Sept. 20th. ERIE EVANS.

CORONERS' LAW AND DEATH CERTIFICATION BILL.

SIR,—I have read with interest the letters appearing in the JOURNAL in reference to the Coroners' Law and Death Certification Bill; and consider that if the medical profession allow the bill as at present constituted to become law without an emphatic protest they have only themselves to blame. It is iniquitous if we are to be burdened by extra duties in the public interest without adequate remuneration. The State can afford to pay, and should be made to pay.

It has been suggested that an all-round fee of 2s. 6d. would meet the case. It may meet the case of the town practitioner with the majority of patients in close proximity to his surgery; but what about the country practitioner who has long distances to go, possibly called out in the middle of the night to see a dying person ten or twelve miles away, who dies a few hours after the visit, and next day the relatives call for the death certificate. Are we to journey back and view the body over rough roads, possibly covered with frost and snow, or in pelting rain, a total distance of twenty or more miles and receive no remuneration, or a paltry half-crown?

Personally, I would sign any form protesting against this unjust clause.—I am, etc.,

September 20th. A COUNTRY G. P.

SIR,—Perhaps the following would meet the objections which have, most properly, been raised as regards the inspection of the body after death by the doctor who had attended. That the doctor visits the house, sees the body, satisfies himself as to the death, charges the same fee to the official authority which he was accustomed to receive during the patient's lifetime. If his visits were at 5s. or 7s., etc, he should charge accordingly. On those terms, but on no others, our objections would cease.—I am, etc.,

Bournemouth, Sept. 17th. A. HUMPHREY DAVY, M.D.

SPIRITUAL HEALING AND THE "GUILD OF HEALTH."

SIR,—It seems a pity that the clerical mind cannot evolve a definite and logical statement of its proposals—especially when these are concerned with the attempt to cure bodily disease—instead of entangling itself in a web of tortuous argument.

The dual personality of Mr. Boyd as a clergyman of the Church of England and as Warden of the Guild of Health may be interesting, but it is of more importance to know what he proposes to do in each capacity. It is impossible to gather this from his letters or from the publications of his guild.

For the information of Mr. Boyd and his fellow "healer," Mr. Lombard, may it not be stated that the medical profession cannot accept the assistance of ignorant free lances who presume, on their own initiative, to treat disease of which they know nothing? Nor can medicine accept the assertion of the existence of "special gifts of healing" on the unsupported testimony of professed healers.

Unfortunately Mr. Boyd and his friends rely on a text of Scripture which would appear to justify them in undertaking the treatment of any case of disease solely by means of prayer, the laying on of hands, and anointing with oil; and until we know the extent to which spiritual healers consider that this text allows them to go in the treatment of physical or mental disorders, and the limitations, if any, that they would set to their efforts, it is impossible to invoke their co-operation.

If Mr. Boyd would be careful only to treat cases under the supervision of medical men—which was plainly not the case with the patient suffering from myasthenia gravis—and if the Guild of Health would simply investigate and discuss in a scientific manner the effects of faith in the treatment of disease, both the clergyman and his Society might hope to obtain some recognition. Under present conditions the Guild of Health can only be classed with "the many fallacious cults, such as Christian Science," mentioned by Mr. Lombard.—I am, etc.,

London, W., Sept. 20th. CHAS. BUTTAR.

SIR,—The letters in your last issue from the late and present wardens of this guild, taken alone read as if I had made a very personal attack on Mr. Boyd. But it only concerns the questions of the public leadership of such a society by a clergyman, and the independence of medical control adopted in his treatment by spiritual healing.

Mr. Boyd says he does not use this wide-spreading medium to obtain cases on which to practise spiritual healing, because during the short time that he has been warden, he himself has "hardly ever accepted" any applicants through the guild, but has advised people writing from a distance to apply to other nearer clergy. But the principle is the same even if up to now he has only treated one or two cases himself and referred the others to clergymen more available than he would be at Clifton. Also, it confirms my original criticism of such proceedings as ministers of religion having people sent to them for spiritual healing through these attractively-named societies, since some of these distant correspondents obviously have heard of Mr. Boyd through the guild.

Mr. Boyd explains the statement made in his first letter that this guild has "nothing whatever to do with the supply of healing" by now saying that the guild is not "concerned" with the treatment of the clergyman to whom any of their applicants may go, as it is carried out in the clergyman's private capacity! So in this connexion it is interesting to quote from the official printed "Memorandum" of this guild, and under "Our Aims," we read:

> We desire also to encourage the exercise of the Gift of Healing in all those members of the Church, whether clerical or lay, who are called by God thereto. We hope that many will be led to enquire whether they are called to this very sacred and responsible work. We do not as a Guild supply healers, though we are ready to give any information we can about those who are engaged in that work. We never in our meetings or pamphlets give advertisements to results, as we believe that to be contrary to the mind of Our Lord and of no value for faith.

Referring to membership, the pamphlet states: "Members are asked to forward the objects of the guild in any way they can," and one of their three professed objects is "For the Restoration to the Church of the Scriptural Practice of Divine Healing."

Finally, in another of their publications the writer says: "In England the Guild of Health is pledged to further spiritual healing." Surely these quotations fully prove the part that this guild intends to take in attracting men and women to give a trial to spiritual healing.

Turning to the letter by Mr. Lombard, he says he could understand my position if Mr. Boyd had been "trespassing on the domain of the medical faculty." This, I hold, was done by treating a lady suffering from myasthenia gravis every day for six weeks without medical supervision and without inquiry of any medical man who had treated her in the past. Mr. Lombard suggests that people go to the clergy for spiritual healing, and that these societies come into being on account of the "ignorance and incompetency of medical men"; but our shortcomings do not justify independent treatment of disease by ministers of religion who are untrained in medicine.

To conclude, the above quotations from the literature of this guild practically say to the general public: "There is a gift of healing given to some people, and perhaps you

may be able to practise it yourself, even if you are only one of the laity. But, any way, we can put you in the way to obtain spiritual healing."

This is no fantastic interpretation of the aims of this guild, and I repeat that such societies can only retard that most desirable closer union of religion and medicine in a combined attempt to help the mental and physical health of mankind.—I am, etc.,

London, Sept. 19th. STANLEY BOUSFIELD.

"SPIRITUAL HEALING."

SIR,—I know of a case, the wife of a professional man, who suffered badly from hysteria associated with bronchial asthma. She attended several medical men, but the hysteria remained uncured until she was brought under the influence of a quack who assumed "spiritual healing." She recovered moral power, and her hysteria left her—the evil spirit was cast out, and she is regarded by all her friends as "cured."

There are still occasional troubles of a bronchial character, which show the organic changes in the lungs, such as are associated with chronic bronchitis, remain, as they necessarily must, uncured. It suffices for the "cure" that the hysteria has disappeared, and the woman is able to perform the ordinary duties of her position in life.

As long as the Rev. F. Boyd and his following are content to be correctly labelled as ministering to those who have lost their mental power, as evidenced by hysteria, and are careful to treat *patients* only, and not *diseases* of an organic character, it will not matter much.

If this be clearly stated the public will be in no danger from their interference, though I am inclined to think the correct diagnosis will be disputed, or, at any rate, objected to, by both the shepherd and his sheep.—I am, etc.,

September 19th. J. W. T.

SHIP SURGEONS.

SIR,—A number of your correspondents seem to be unaware of the fact that for a few years past the chief steamship companies at Liverpool have had printed on the backs of tickets issued *to first-class passengers* a notice to the effect that the ship surgeon is entitled to charge reasonable fees for the treatment of such sick passengers. I take some credit for the adoption of this rule, and not a few surgeons have told me that it has greatly lessened their work as to the treatment of very trivial affections, while it has given them *the right* to ask for, and accept, fees. It is further provided by some of the steamship companies that a passenger has the right to appeal to the captain if the fees are thought to be excessive. I am told that on the Austrian Lloyd Company a similar notice is fixed in the saloon. I think one tourist steamship company in London has printed on each ticket a notice to the effect that the surgeon (who is not paid any salary by the company) is entitled to charge sick passengers the usual fees.

It is difficult to understand why the deans of the medical faculties do not "post" newly qualified doctors as to the conditions of sea life, and to advise them how to act. The ship surgeon is the only person on board a ship who remains at the salary he began upon—generally £10 per month—no matter how many years he serves. Whose fault is this? Only his own. I think I am right in stating that the Booth Steamship Company pay their surgeons up to £20 per month.

I have often thought it would be a very desirable plan to promote surgeons to the first-class ships as vacancies occur, and to give them an increase of salary each year. Some have suggested an annual bonus, but this is very nebulous, especially as many passengers may complain! It has also been suggested that sea-going doctors should have their own union in London, and that only and solely through this union should ship doctors be supplied. This is an idea worth thinking upon.

The class of men going to sea now is usually a good class, while the number of the sick public taking sea trips is increasing yearly.

Ship surgeons suffer from the same chronic complaints as do others of the medical calling in so far that they will neither organize, nor will they pay those who organize for them. Even the dock labourers and street sweepers have their organizations, and can bring influence to bear with the view of furthering their betterment. Ship surgeons also suffer like others of us in this respect, that they feel if one or two of them become "agitators," the other "deadheads" will jump at their places! Well, if this is an incurable social disease, let the ship surgeons suffer. Any body of men should receive what they ask for, even if this be the ignoring of their supposed sufferings. It is for them as a body, and *only* as a collective body, to draw up a reasonable proposal and to act upon it. This they have for at least thirty-five years refused to do. Their only idea is to go on growling—as they seem to prefer to do—and to be ignored. What do they want? To be mugwumps?—I am, etc.,

Liverpool, Sept. 18th. R. R. RENTOUL.

"KANGRI CANCER": A PHYSIOLOGICAL ASPECT.

SIR,—The original articles on the subject of cancer which appear in the BRITISH MEDICAL JOURNAL of September 3rd, along with your complementary extract from the third scientific report on the investigations of the Imperial Cancer Research, while affording instructive reading, call for a few remarks by a former colleague of Dr. Neve, twelve years of whose early professional career were spent among the people of Kashmir (1884–95). The points I desire to submit are: The well-known association of cancer incidence with riverine districts and alluvial soils, as shown among the dwellers of the Vale of Kashmir, compared with those inhabiting the surrounding mountainous regions—namely, Ladakh and Iskardu to the north and Poonch and Kishtwar to the south. It is true that the mountaineers, being more hardy, resort less to this means of warmth during the winter months, but the extreme rarity of the disease among them cannot thus be accounted for, though all these tribes are equally verminiferous in their apparel. The kangri is only worn during the winter months, from October till April; during the remaining six months there is opportunity for recovery from its irritative effects. With the other well-known chemical and thermic irritants, as the chewing of betel nut and lime, or the clay pipe smoking, the effect is more continuous throughout the years. May this account for the lesser "malignancy" of the former type?

In regard to the clinical pathology, Dr. Neve states that, "Glands are slow to show signs of infection." There does not seem to be any distinction drawn between the physiologically involved glands which hypertrophy in functioning and those that have degenerated and become subsequently infected.

The detection of involved glands merely by palpation, it will be admitted, is no simple matter, and one that is open to serious fallacy. Those that are hypertrophied are not necessarily infected.

Mr. Barrett Lockwood, alluding to the changes in the axillary glands in a case of mammary carcinoma extirpated by him, says:[1]

> The axillary lymphatic glands were sent for examination. Mr. Ernest Shaw, whose histological skill is acknowledged, reported that *the large glands did not contain cancer, but that some minute ones did* (italics mine). This, too, Mr. Shaw tells me, is an ordinary experience.

I beg to submit that these "minute ones" were supernumerary ones in a state of evolution that had come into being to meet the requirements, just as they do around the mammary gland during the period of lactation, to meet the mouth infection of the milk ducts by the infant, a fact first observed by Stiles. They became infected, being in a rudimentary and immature state, *and these, owing to their minuteness*, often escape inclusion in the radical operation.

The inguinal lymphatics of the Kashmiri after middle life are, in the great majority, in an unhealthy state, owing to the fact that probably no race under the sun is more afflicted with venereal disease and its sequelae.

Another reason for the apparent non-malignancy and late involvement of the glands, apart from their remoteness from the umbilical region, might be the compensatory functioning of the large prickle cells of the rete Malpighi, which are lymphoid in character, and would react outside a certain radius of the areas denervated by the constant heat.

The acquired denervations produced by mechanical, chemical, and thermic agents, though greater in degree,

[1] BRITISH MEDICAL JOURNAL, January 27th, 1906.

seem to be analogous to the physiological trophic degeneration of the sexual organs and their adnexae at the "change of life."

The denervations induced by the molecular action of the *x* rays is markedly different from that produced by the well-known agents enumerated. By this action of radio-active agents it is possible to induce step by step cellular changes which have all the clinical and histological features of epithelioma in the shortest time, at any age, on any *normal area* of the body, including the bones, while it is much more difficult, if even possible, to induce similar changes on *abnormal areas*, such as scar tissue or previously denervated areas from other causes, by this means. The effect is the very opposite—namely, a re-innervation of such areas. I have drawn attention to these effects elsewhere recently.[2]

Again, it has been shown that in ordinary cancerous processes the histological changes are more conspicuously retrograde than recuperative;[3] in the *x*-ray changes they are conspicuously recuperative. Lymphatic gland involvement is almost unknown, and, where it has been found, was probably the result of secondary microbic infection intercurrently acquired.

I have not seen Dr. Haarland's view as to how cancer develops in mice in association with continuous or intermittent efforts at repair and regeneration, but Dr. Clowes, of the New York State Cancer Laboratory, stated that:[4] "The tendency (is) often noticed in tumours to remain stationary after fairly rapid development, and then subsequently either to grow rapidly or retrogress. In this connexion it must be noted that *x* rays produce a much more marked effect at this stage, at which apparently the disease has quite overcome the natural immunity of the mouse."

Messrs. Farmer, Moore, and Walker, of the Liverpool Cancer Research Laboratories, have shown that by subjecting Jensen tumour tissue to the prolonged freezing action of liquid air its "malignancy" or capacity for successful implantation was greatly increased, and I cannot conceive of any mammalian tissue cells surviving such an ordeal, though the more lowly minute microbic forms evidently do so.—I am, etc.,

London, W., Sept. 4th. H. D. MCCULLOCH.

A CAUSE OF DEATH AFTER OPERATION FOR APPENDICITIS.

SIR,—In your issue of August 27th there was a short paper by Mr. Herbert Brown, of Ipswich, on this subject, which appealed to me very strongly. My experience corroborates every word of Mr. Brown's paper, and I am sure if the axioms as to treatment at the end of his article were followed out many more lives would be saved by operation. Children cannot stand a severe operation, and it is much better to leave the appendix, as a general rule, after opening and draining the abscess cavity. In a similar case to the one described by Mr. Brown, a little girl of 5 years who died sixteen hours after operation, I put death down to shock from the manipulation necessary in order to remove the appendix, but whether due to shock or to the sudden deluging of the system with toxins, as Mr. Brown thinks, the moral is the same—the less manipulation that the patient has to undergo the better, especially if the patient is a child. General practice teaches one that the appendix may be safely left behind in abscess cases as it rarely gives rise to any trouble afterwards.

Of course, besides the danger of death in twenty-four hours, there is always the risk of causing a localized abscess to become a spreading peritonitis by insufficient packing off of the peritoneal cavity, and I am afraid I have seen cases lost from this cause; these patients succumb on the third and fourth day generally, and are quite distinct from the cases quoted by Mr. Brown. This danger is another reason for delaying operation to the end of the first week or even ten days from the commencement of symptoms as advised by Mr. Brown, as by that time adhesions are stronger and in many cases the anterior abdominal wall is involved in the abscess cavity, and the general peritoneal cavity is not opened at all.

Operating during the first twenty-four hours is a counsel of perfection that is very rarely feasible in general practice, the two great difficulties being that the friends delay in sending for a doctor sometimes in the worst cases, and, secondly, the patient withholds consent at first.

Another reason for not being in a hurry to operate in acute cases first seen after twenty-four hours from commencement of the attack is that it is wonderful how often cases that one feels certain must go on to abscess will settle down again; rigidity of the abdominal wall and palpable masses disappear as if by magic, so that the case eventually comes to be treated by an interval operation.

For these reasons, in addition to those given by Mr. Brown, I heartily commend his axioms as to treatment as stated at the end of his article.—I am, etc.,

W. A. REES, M.D Lond., F.R.C.S.Eng.

Swanage, Sept. 2nd.

SIR,—Mr. C. A. Morton disagrees with my theory, on grounds which appear to me to be somewhat trivial and partly founded on a misconception of my meaning.

Of course, every one knows that a septicaemia is fatal not because of the "mechanical effect of the organism in blocking minute vessels," but because of the chemical effect of the toxins elaborated by the organism.

I understand by a *septicaemia* a *toxaemia* produced by organisms multiplying in the blood or lymph stream.

Needless to say, I did not suggest any such mechanical theory to explain these cases.

My reasons for attributing the fatal issue to a septicaemia rather than a toxaemia alone were, first, that I did not think a sufficiently large dose of toxin would be absorbed from such a small area in the short time occupied by the operation, and secondly, because there seemed to be a definite incubation period of from six to twelve hours, during which the patients appeared to be progressing normally; the serious symptoms often came on almost suddenly. I have seen an acute streptococcic infection with pus formation manifest itself within six hours of an operation. I must confess, however, that I have no proof of this theory, as I have not attempted to obtain a culture from the patient's blood.

But the question of toxaemia or septicaemia is of minor importance, and we are both agreed as to the danger of removing the layer of lymph. Then Mr. Morton refers to two cases in which a gangrenous appendix was removed, both of which died with the symptoms which I have described. Of course the presence of pus is not necessary; it is not the pus, but the organisms and toxin which are the source of danger, and a gangrenous appendix is a hot-bed of organisms. In fact, a case of this kind would be more dangerous, as there is less likelihood of the presence of a well-defined layer of lymph surrounding the focus of infection.

He goes on to quote four cases in which the symptoms of appendicitis had been present for a week or more before operation. These cases only came under his care at the time of operation; but, even if the symptoms referred to the appendix had been present for more than a week, it by no means follows that an abscess had existed for that period.

My plea is for delay in operating unless the case is seen in the first twenty-four hours, or there is other indication such as commencing general infection of the peritoneum, etc. Of course this applies to cases which can be kept under close observation, and the surgeon should be ready to operate at any time when it appears to him advisable. In these days of hospitals and surgical homes such a course is generally quite feasible.

Sir Frederick Treves years ago advocated delay; he considered an operation during the first week especially dangerous, and I think later experience has justified this opinion.—I am, etc.,

Ipswich, Sept. 4th. HERBERT H. BROWN.

PORTRAITS ILLUSTRATING "SPOTTED FEVER."

SIR,—In the Clinical Museum (The Polyclinic) we have no single representation of the eruption which sometimes attends the form of cerebro-spinal meningitis which has been by some named "spotted fever." If any of your readers can assist me to obtain a drawing which we could copy I shall be much obliged. It will be still more satisfactory if we can borrow several. They will be well cared for and duly returned.—I am, etc.,

London, W.C., Sept. 20th. JONATHAN HUTCHINSON.

[2] Dr. McCulloch. ibid., August 27th, 1910, p. 524.
[3] Dr. James Metcalfe, ibid., August 27th, 1910, p. 542.
Ibid., December 1st, 1906, p. 1553.

PALAEOGENETIC FACE-PATTERN IN ACROTERIC PIEBALDS.

SIR,—This communication must reach you very late, partly because I am so far away, and partly because I have been on holiday and find a pile of BRITISH MEDICAL JOURNALS awaiting me on my return; but I hope the interest of what I have to say will excuse its tardy appearance.

One of my fellow-travellers lent me a book to read. It was entitled "Amongst the Cannibals of New Guinea," and was written by a scientist named Pratt, who had been engaged in studying the butterflies and birds of New Guinea. It was profusely illustrated by excellent photographs, amongst which was one of the piebald men of New Guinea. Mr. Pratt himself is not a medical man, but nevertheless he advances the hypothesis that this condition of piebaldness may not be a specific character, but due to a skin disease; but he says "they seem to suffer no disability of any kind."

It will be noticed that the illustration from Buffon, in Sir Jonathan Hutchinson's article, was of a child from the West Indies, and there is no note as to the origin of the other three negresses.

As I must quote from memory I cannot be sure of the exact title of the book; and I believe the author is now resident in London, though I do not know his address.—I am, etc.,

Outtrim, South Gippsland, July 23rd. A. E. TAYLOR.

JONNESCO'S METHOD OF SPINAL ANALGESIA.

SIR,—In view of Professor Jonnesco's failure to convince both his English and American *confrères* of the efficacy of his method, and as a corollary to Mr. McGavin's paper in the JOURNAL of September 17th (p. 733), it may be of interest to record my experience of this procedure on Egyptian patients in Kasr el-Ainy Hospital, Cairo.

I faithfully followed Jonnesco's directions as regards technique, and Messrs. Parke Davis were good enough to make me a series of samples of Jonnesco's solutions in ampoules sufficient for one injection, which worked admirably.

I have done ten cases by the high method, and have convinced myself of its efficacy, but do not think it is a method to be recommended, either in the interests of the patient or as a subject for instruction of students. The first two cases were not altogether successful, owing to my faulty technique, but in both cases I was able to complete the operation by giving literally only a few drops of chloroform. In all the other cases anaesthesia was perfect, and, with one exception, without any bad effects. This case was one of a large tumour of the palate, of doubtful pathology, in whom, after a preliminary laryngotomy, an attempt was made to remove the tumour, when he became pale and restless, and gradually stopped breathing. Artificial respiration was carried out for ten minutes, and the breathing slowly returned, and I was able to complete the operation, which necessitated considerable manipulation after splitting the cheek, without any other anaesthetic. Next morning the patient was sitting up, and had no further trouble. I blame myself for this accident, as I feel sure I kept the head too low too long after the injection.

Two other cases—one a boy of 10—had symptoms of "air hunger" during the operation, but soon recovered. My cases include two rodent ulcers of ear and of eye, two necrosis of jaw, two necrosis of humerus, tuberculous cervical glands, tuberculous ulceration over sternum, tumour of palate, and scirrhus of breast.

If I am tempted to employ the high method again it will be when an extensive operation is required for scirrhus of the breast, where the prevention of shock is a desideratum; but my opinion is that, though the anaesthesia may be and generally is quite perfect, we are running quite an unwarranted risk in subjecting our patients to such danger as must necessarily be present in producing effects on the spinal cord and its nerves in such close proximity to the vital centres in the medulla.

The low method is on quite a different footing. It has become almost the routine practice of my colleagues and myself at Kasr-el-Ainy Hospital to employ spinal anaesthesia by stovaine for all operations below the nipple line, and it is rarely, if ever, necessary to make the injection higher than in the dorsi-lumbar space. We have not yet seen any bad effects from its use.

I have been accustomed to use Billon's solution with epirenine, but have had my most perfect results and more freedom from headache and other minor after-effects with Jonnesco's solutions, made up by Messrs. Parke Davis in ampoules. In one case I was able to do an operation for an ununited fracture of the femur lasting one hour and forty minutes with one injection.

The actual dose of the stovaine does not appear to be so important as Jonnesco holds, for I found that when my supply of the stronger solutions was exhausted I got just as good effects with the weaker solutions, always provided that the solution was properly introduced into the cerebro-spinal space. I generally allowed some of the cerebro-spinal fluid to mix with the solution in the syringe before injecting.—I am, etc.,

September 20th. FRANK C. MADDEN.

THE PREVENTION OR ABORTION OF CATARRH.

SIR,—Is it possible to prevent catarrh? or, catarrh having commenced, is it possible to abort it? I have long been interested—enormously interested—in this question, and a few years ago I started an interesting discussion in the BRITISH MEDICAL JOURNAL on the subject of these infectious catarrhs. The title was something as follows: "A Plea for the Investigation of Catarrh."

I entered the medical profession in 1864, and every year convinces me more and more that the infectious catarrhs play very much the same part with regard to the inhabitants of temperate climates that the malarial class of disorders do to the tropical and subtropical populations. Not that I would suggest that there is the slightest pathological similitude between the two classes of disorders, further than that both are infectious, both affect large sections of the population, and both cause an enormous amount of sickness, disability, and, ultimately, directly or indirectly, death.

I feel positively jealous, and even indignant, when I think of the enormous efforts made and money spent in investigating the causes and prevention of such diseases as malaria, sleeping sickness, beri-beri, kala-azar, etc., and the comparatively puny and half-hearted endeavours made to combat our deadly enemy, the infectious catarrhs. Why, the matter is one of national importance, and ought long ago to have received a large grant from Government, and even been the subject of a Royal Commission! At a guess, I should say that, on an average, every man, woman, and child in the United Kingdom is laid up with infectious catarrh for from one to two weeks every year. The population being some 46,000,000, think of the enormous disability and interruption of work this means! Would that the mischief ended here; unfortunately it does not. The effects of influenzal catarrhs—the pyrexial class—often last weeks, or months, or even years, whilst the consequences, immediate and remote, are full of the direst possibilities. Look how often the fell enemy attacks and disables our legislators. Fools! Incapables! One would have expected that they would have had the intelligence and enterprise to have moved energetically and regardless of expense long ago. Vain expectations! They are fit for nothing but to tax us.

I am prompted to these remarks by reflecting on my experiences of two old lady relatives, who for years have depended solely upon myself for medical care and treatment. Originally both were delicate, and when young suffered from a variety of derangements connected with this delicacy. They have had such disorders as chronic and acute obstruction of the bowels, indigestion, constipation, Ménière's vertigo (very bad for years), angina pectoris (very bad, and often nearly fatal), migraine, rheumatic gout, extreme degeneration of arteries, general and special debilities, extensive bedsores, congestion of lung, passage of renal calculi with terrible pain and vomiting, last year nineteen small calculi (recovered in a week), falls, and severe injury to head, etc., vesical catarrh and retention of urine, incarcerated fibroid in pelvis, attacks of diarrhoea and dysentery. These constitute a few of the things I have dealt with in the last twenty years. I have not managed so very badly, as they will attain the ages of 90 and 92 respectively if they live till next month, and are as well as, if not much better than, they have been for years. But—and here is the

point—great as have been my doubts and anxieties with regard to many of the attacks mentioned, the infectious catarrhs have given me more trouble and anxious solicitude than all the ailments I have mentioned put together. Every year they are almost sure to have one or more attacks of acute infectious catarrh-influenza, and then there is the devil to pay. Bronchial catarrh, congestion of lungs, debility, bedsores, etc. We all know the picture too well, and we all know, by painful experience, the failure too often of the ordinary remedies. Creasotal, quinine, the salicylates, alkalies, ammonium chloride, sodium and ammonium benzoate, ipecacuanha, belladonna, digitalis, strychnine, aconite, heroin—all these have at one or other time been tried, and have some of them been of benefit—but, oh! for a direct prophylactic or antidote such as diphtheria antitoxin or quinine in malaria, or hypodermic morphine in choleraic diarrhoea.

If I only had such a remedy, and its use were reasonably safe, my old ladies would have 100 already in sight. Can any one help me?—I am, etc.,

Blackpool, Aug. 26th. WM. HARDMAN.

DANGERS OF THE ELECTRIC CURRENT.

SIR,—The communication with reference to the dangers of the electric current made by Dr. S. Jellinek of Vienna to the meeting of the Section of Radiology and Medical Electricity of the British Medical Association, and reported in the JOURNAL of August 27th, was of special interest to me owing to the fact that on two occasions I have been the victim of accidents very similar in nature to that related by the doctor as having occurred to a girl while bathing in a metallic tub, though fortunately for me without the serious consequences which occurred in her case. About two years ago I was bathing in a small bath-room attached to the flat I then occupied. I was standing up in a bath half filled with water, and in stretching out to seize hold of a towel suspended from a hook on the door my right arm, all wet as it was, brushed against a brass switch which controlled the electric lamp hanging from the ceiling, and lit at the time. Immediately all the muscles of the right side of my body seemed clutched by an invisible power, and I was flung violently down into the bath. I have no recollection of coming into contact with the bath, and can only remember that on coming to realize my position I found myself breathing hard and deep, at the same time feeling a curious tingling sensation all over the body and a soreness of the muscles so rudely brought into action. In a few moments I had recovered sufficiently to get out of the bath and proceed to mop up the flood of water which my hurried descent had expelled from the bath on to the floor. It was some days before I got rid of the effects of the shock upon my dorsal musculature.

I attribute the accident to leakage of current from the switch as the result of the deposit upon it of moisture condensed from the somewhat steamy atmosphere. The current was one of 210 volts, but I should doubt whether the whole of it passed through my body. I was unfortunately unable to notice whether the lamp remained lit during the passage of the current through me.

My second accident occurred some nine months later in the same room and from the same cause, for I was foolish enough to disregard the warning given me by the first. Its effects were similar: bruised muscles and a shock to the nerves.—I am, etc.,

London, N.W., Sept. 17th. HUBERT PINTO LEITE.

THE INTERPRETATION OF X-RAY NEGATIVES.

SIR,—In reference to Dr. Pirie's paper on this interesting subject in the JOURNAL for September 3rd, not only is the *x*-ray negative viewed from its film side more reliable than a print in the matter of detail, but it is also more correct in the matter of perspective and form.

While the fluorescent screen viewed from the only practicable side it can be viewed from (namely, the side remote from the focus tube in action) and the *x* ray print agree with the ordinary photographic print in the matter of tone, in the matter of form the *x* ray negative viewed from its film side alone can correctly correspond with the ordinary photographic print or a draughtsman's sketch of the objects portrayed.

The case of an outline drawing or sketch as compared with an *x*-ray photograph is perhaps the simplest to understand, and may be briefly set down now.

The *x*-ray photographer, by means of his invisible rays, throws a shadow of the objects he wishes to take upon a plane of delineation on the far side of the objects to be taken from the focus tube. The draughtsman, sketching the same objects supposed to be visible, or actually so, draws them on a plane of delineation between his eye and the objects to be drawn. If his eye be in the same relative position to the objects in question that the centre of emission of the focus tube originally held, and the plane of his drawing be parallel to the *x*-ray photographic plate, then all parts point for point in these two delineations of the same object will appear in the same direction and under the same angles—that is, in the same perspective—as they would appear to be in the object to the eye itself.

The accepted view, I know, is quite the reverse of this, and must lead to many practical mistakes and confusion of interpretation; and, of course, is due largely to the fact that the fluorescent screen can be viewed only from what I believe to be the wrong or reverse side, and the belief that the *x*-ray print corresponds to the ordinary photographic print in form as well as in tone.—I am, etc.,

Bristol, Sept. 3rd. WILLIAM COTTON, M.D.

Medico-Legal.

MALE SERVANTS.

AT the South-Western Police Court, on September 8th, a claim was made on behalf of the London County Council against a medical man in Wandsworth for keeping a male servant without a licence authorizing his employment. The servant in question was a surgery boy, who attended night and morning, who was elsewhere employed during the main part of the day, and who slept at his own home. During his hours of work at the surgery he did many odd jobs, including sometimes knife and boot cleaning. It was contended that despite the latter facts nothing in the nature of the boy's employment brought him within the meaning of the Act relating to male servants. This point having been argued by counsel on both sides, the presiding magistrate gave his decision, which was in favour of the medical man concerned, Dr. John Tod Thyne. In addition, the court awarded him three guineas against the Council.

This is the first occasion, so far as we are aware, on which the same claim has been made in the metropolitan area, and Dr. Thyne's energy in rebutting it would seem likely to save a large sum to the profession as a whole, and is therefore a matter for general congratulation.

THE HYGIENIC INSTITUTE.

IN the Sheriff's Court in Glasgow on September 1st judgement was delivered in an action in which the Hygienic Institute in Glasgow and Oscar Farkasch and Michael Lauer, partners in the business conducted at this institute, both of Glasgow, were joint defenders. The plaintiff or pursuer was a woman, an inhabitant of Ryton-on-Tyne in Durham, who had had teeth extracted at the institution in question in the circumstances and with the results indicated later on. The court awarded her by way of special and general damages a sum of £52 15s., together with costs. The more important items in the findings of the court were as follows:

The court held that the defenders had entered into a contract with the pursuer, and by that contract held out themselves and their representatives as extractors of teeth and practisers of dentistry, and that in virtue of that contract had bound themselves and their representatives to perform the necessary dental operation on the pursuer with ordinary success and with ordinary care and prudence, and that in the event of breach of the obligation thus established they would be liable to damages. It also held that in part performance of the said contract William Bell, an operator in the employment of the defenders, extracted ten teeth from the mouth of the pursuer; that the said William Bell and his assistant during the operation, Joseph Sharp, were not qualified dental practitioners; that in performing the said operation the said William Bell tore the skin or mucous membrane in the pursuer's mouth, leaving a flap piece thereof lying over in such a fashion as to expose and lay bare the whole of the front of the lower jaw bone; that after completing the said operation the said William Bell and his assistant left the pursuer in a condition of excessive bleeding from the mouth without applying any remedy thereto; that the instruments used in performing the said operation were not sterilized before being put into the pursuer's mouth; that three days after the said operation the pursuer's mouth became septic; that the failure to sterilize the said instruments was the probable cause of the said septic condition of the mouth, and that in consequance of her said injuries the pursuer was confined to her bed for ten days and required medical attention for six weeks.

Incidentally, the court, speaking of the evidence of the medical witness, Dr. Reid Pirrie, of Ryton-on-Tyne, said that, while he had expressed himself in somewhat forcible language in his disapproval of the manner in which the operation had been conducted, he appeared to the court to be in no way exaggerating what he had witnessed, but, on the contrary, to be giving a carefully-considered and well-thought-over opinion.

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In the course of his introductory speech, Dr. Dawson said that measles was responsible for ten times the number of deaths resulting from scarlet fever or diphtheria, while it was the secondary effects of measles which caused degenerates. His desire for notification was not based mainly on professional or personal grounds, though one of his children had died in consequence of the absence of notification, but on the question of principle. It was an opprobrium on their health authorities that they were so supine in this matter when measles had been notifiable for years in Paris. He had hoped Dr. Rushbrooke would second his motion, but in his absence he trusted Dr. Miller would do so. The latter, however, declined to do so, and the motion was seconded by Councillor Wild and agreed to.

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Obituary.

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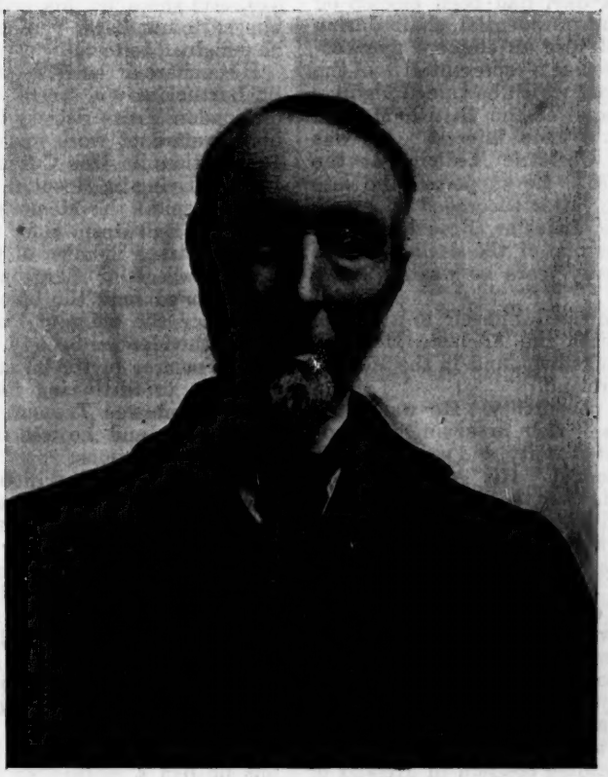
DEATH has removed with tragic suddenness a familiar figure in the medical and social circles of Ireland. Dr. Lombe Atthill is gone—but he has gone at the close of an exceptionally long, useful, and successful life. Up to the end he carried his years lightly. His temperament was essentially of the active type. He *had* to be up and doing, and any suggestion that he required bodily or mental rest was quite distasteful to him. It was known to himself and to his friends for a considerable time that the muscular power of his heart was on the wane. Trouble with his breathing after a little unusual exertion gave him fears of sudden cardiac collapse, but in spite of this he seemed in his usual health when he started a few days before his death to spend a short holiday with relations near Rochester. He spent a night in London, and during the next few days he revisited some of the scenes of his early school days, and with boyish delight recalled the memories of those far-off times. He was in treaty for the publication of Personal Reminiscences which were to be supplementary to the Medical Recollections published in the BRITISH MEDICAL JOURNAL in the early part of the present year, and it is probable that when he set forth alone from his friend's house on Wednesday, September 14th, he had as his objective an interview with his publishers in London. Whatever his object was, it was not to be accomplished, for as he was counting the change he had received at the ticket office in Strood Railway Station, the end came in a moment, without a murmur and without a struggle. But in this apparently tragic ending he was saved the realization of the fear which possesses many active men, "of the sick room, the mortal strife, the turmoil for a little breath." The news of his sudden "call," far away from his home, was a serious shock to his family, and particularly so to Mrs. Atthill, who by reason of her greater age, had been unable to accompany him on the visit he was making to one of her granddaughters.



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Lombe Atthill was born on December 3rd, 1827. He was the youngest and thirteenth surviving child of the Rev. William Atthill, who was Rector of the parish of Magheracoulmoney, in the county of Fermanagh. The latter—who was the son of the Rev. W. Atthill, the representative of an old Norfolk family whose seat was Brandiston Hall—had been a distinguished mathematician, and had graduated from Cambridge University as Second Wrangler of his year. He sent his youngest son to school in England, and subsequently to Portora. His school days over, and selecting medicine as a profession, Lombe Atthill was apprenticed in 1844 to Mr. Maurice Colles, at that time Surgeon to the Meath Hospital. Here young Atthill had the signal advantage of being trained in the medical wards of the Meath Hospital by the great William Stokes. He obtained the Licence in Surgery of the Royal College of Surgeons in Ireland in 1847, and he has put it on record that, "I do not think from the day I joined the class to the final day of the examination for my diploma I was ever once absent unless prevented from illness or during vacation."

There is no necessity to reiterate on the present occasion the keen struggle for a livelihood which the youthful surgeon encountered and which he himself has portrayed so graphically in his "Recollections." The means were small, owing to his father's death, but the spirit of determination was great. He was not contented with his general educational and professional attainments, so he proceeded to graduate in Arts and Medicine in the University of Dublin in 1849. These were surely times of plain living and high thinking for the ambitious student. Later on his experiences as a country practitioner were not reassuring, so he migrated back to Dublin, and having failed to secure a union appointment, he began his gynaecological career by entering the Rotunda Hospital as Resident Assistant to the Master for a period of three years from 1851. In these days of struggle he had the temerity even to get married.

Dr. Atthill's connexion with the Royal College of Physicians began in 1857, when he obtained the Licence in Medicine. In 1860 he was elected to the Fellowship, and in the following February he became Registrar, a position which he filled with great ability for eight years. He was subsequently elected a Censor for two periods of two years each, and also an Examiner in Midwifery and Vice-President. He filled the Presidential Chair from 1888 to 1890, and during his term of presidency he was chosen by the College to succeed the late Dr. Aquila Smith as its representative on the General Medical Council. He discharged the important duties of this distinguished office for a period of fourteen years in a manner which gave entire satisfaction to the College. His voluntary retirement from the office in 1903 was followed by the election of Sir John Moore as his successor. He was also Treasurer of the College from 1890 until 1903.

From 1872 Dr. Atthill had advocated the establishment of conjoint examinations with the Royal College of Surgeons for the Licences of the two Colleges, and when eventually the Conjoint Board was formed in 1886 he became one of the original representatives of the College of Physicians on the Committee of Management.

In 1868 fortune began to smile upon Atthill, for in that year he was appointed Gynaecologist to the Adelaide Hospital in Dublin. There he soon gathered around him a large extern clinic, and the publication of many of the clinical lectures which he delivered to his class at this time not only established his reputation as a gynaecologist, but brought him into prominence as an author. He collected these published lectures into a small manual entitled *Diseases of Women*, which ran through six editions within a few years. The eighth and final edition of this little work fittingly appeared at the expiration of his term of office as Master of the Rotunda Lying-in Hospital. In 1875 he became Master of that well-known institution, and during his full period of seven years he performed a large amount of truly pioneer work which made advancement along modern lines easier for those who succeeded him.

In addition to the *Diseases of Women*, he contributed many papers to the medical journals. Among these were: On Chloroform in Midwifery and its uses in Puerperal Con-

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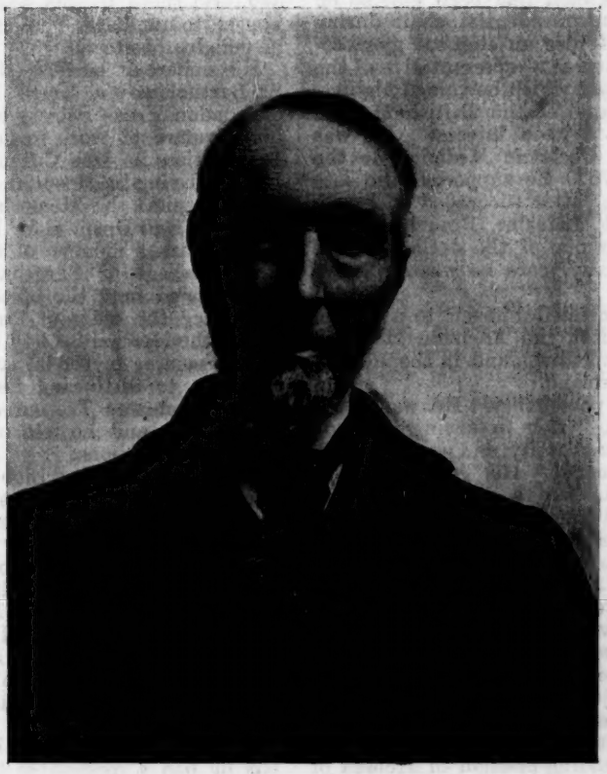

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Dr. Atthill's connexion with the Royal College of Physicians began in 1857, when he obtained the Licence in Medicine. In 1860 he was elected to the Fellowship, and in the following February he became Registrar, a position which he filled with great ability for eight years. He was subsequently elected a Censor for two periods of two years each, and also an Examiner in Midwifery and Vice-President. He filled the Presidential Chair from 1888 to 1890, and during his term of presidency he was chosen by the College to succeed the late Dr. Aquila Smith as its representative on the General Medical Council. He discharged the important duties of this distinguished office for a period of fourteen years in a manner which gave entire satisfaction to the College. His voluntary retirement from the office in 1903 was followed by the election of Sir John Moore as his successor. He was also Treasurer of the College from 1890 until 1903.

From 1872 Dr. Atthill had advocated the establishment of conjoint examinations with the Royal College of Surgeons for the Licences of the two Colleges, and when eventually the Conjoint Board was formed in 1886 he became one of the original representatives of the College of Physicians on the Committee of Management.

In 1868 fortune began to smile upon Atthill, for in that year he was appointed Gynaecologist to the Adelaide Hospital in Dublin. There he soon gathered around him a large extern clinic, and the publication of many of the clinical lectures which he delivered to his class at this time not only established his reputation as a gynaecologist, but brought him into prominence as an author. He collected these published lectures into a small manual entitled *Diseases of Women*, which ran through six editions within a few years. The eighth and final edition of this little work fittingly appeared at the expiration of his term of office as Master of the Rotunda Lying-in Hospital. In 1875 he became Master of that well-known institution, and during his full period of seven years he performed a large amount of truly pioneer work which made advancement along modern lines easier for those who succeeded him.

In addition to the *Diseases of Women*, he contributed many papers to the medical journals. Among these were: On Chloroform in Midwifery and its uses in Puerperal Con-

vulsions; Chronic Inflammation of the Vagina and Reflex Irritation of the Bladder; Retroflexion of the Uterus and Inversion of the Uterus.

It would be, of course, quite futile to institute comparisons between a work on gynaecology written in the days when this branch of medical science was in its infancy and the elaborate textbooks of to-day. In any case, the writer of this notice is incompetent to offer a fair criticism, and it must be left to others who are engaged in this particular branch of medical science to estimate Atthill's writing and teaching at their proper value.

Dr. Atthill became President of the Old Dublin Obstetrical Society in 1874, when he delivered a Presidential address on the Physiology of Menstruation. Then when the Obstetrical Society, at whose meetings he was a constant contributor, coalesced with the other existing societies in 1882, to form the Royal Academy of Medicine in Ireland, Atthill became an active member in the Councils of the latter. He was President of the Section of Obstetrics in 1884–6, and again in 1895–7; and finally he enjoyed the marked distinction of being elected President of the Academy in 1900 for the usual term of three years.

This office is occupied alternately by a physician and surgeon, and as the late Dr. George Hugh Kidd, an eminent gynaecologist in his day, had been elected on a previous occasion to fill the presidential chair during a surgical term, so Dr. Atthill, also an eminent gynaecologist, came in turn to be chosen as a representative of the physicians. This was an honour which he valued highly.

In the welfare and progress of the British Medical Association Dr. Atthill took a keen interest. He was President of the Section of Obstetric Medicine at the Annual Meeting held in 1876. He supported the late Sir George Duffey when the latter succeeded in establishing the Dublin, now the Leinster, Branch of the Association in 1877. He was one of the earliest of the Branch Presidents, and for many years he was an active member of the Council.

To his latest days he interested himself to a special degree in the Rotunda Hospital, the Adelaide Hospital, the small local hospital at Monkstown, and in the Medical Benevolent Fund Society of Ireland.

Dr. Atthill was a strong personality. He was not a brilliant speaker, but he was "rich in saving common sense." He had a fine business capacity, and was a reliable guide in the disposal of money. His generosity was unostentatious, but real. He was a wise and shrewd counsellor—a true and faithful friend. His ripe experience and worldly knowledge were always at the service of his more youthful colleagues. He worshipped at the shrine of the Great Master who went about doing good. He was abstemious in all things, and early in life had learnt the sovereign lessons of "self-reverence, self-knowledge, self-control." He had a high sense of honour, and acted up to his ideals. He strove hard to know what was right, and he acted rightly as far as his judgement could guide him. He worked hard; he had led a strenuous life, and he was rewarded with professional and financial success. For many years he occupied the leading position in Ireland of his speciality. He cared nothing for titular honours. He had won handsomely in the great game of life. He had the courage to do what others in an equally successful position often fear to do, and that was when he had made a competence he retired from his active professional work and so made room for the younger men who were struggling in their turn to succeed.

In his beautiful home at Monkstown Castle, to which he retired in 1896, he had much to engage his tireless energy, and many an enjoyable summer evening his hard-worked medical friends from the city spent in his grounds and around his hospitable table. His garden was a source of genuine pride to him. He was exceedingly fond of yachting, and had many disturbing experiences in his yacht. When quite 70 years of age he took to cycling, and even up to a recent date he favoured this mode of recreation.

He lost his first wife many years ago, and subsequently married Mrs. Duffey, mother of the late Sir George Duffey. To his widow, and to all the members of his family, the sympathy of the medical profession is extended in their great bereavement.

The remains were brought to Dublin, and laid to rest in Mount Jerome Cemetery on Saturday morning, September 17th, when the Fellows of the Royal College of Physicians attended in large numbers to pay their last tribute of respect to the "Father" of the College in whose welfare he took the deepest interest for a period of forty years.

JOHN LANGTON, F.R.C.S.,

CONSULTING SURGEON, ST. BARTHOLOMEW'S HOSPITAL.

The death of Mr. John Langton, of St. Bartholomew's Hospital, took place on Sunday, September 11th, after a short illness. Mr. Langton was 70 years of age, and almost the whole of his very busy life had been devoted to the study and practice of the surgical profession, to which he was whole-heartedly attached.

He was educated at Brighton and in Germany, matriculated at the London University, and, starting at the age of 17 as a student at St. Bartholomew's Hospital, he worked there without intermission until his retirement from the active staff in 1904, when he was appointed Consulting Surgeon and a Governor of the hospital.

After filling responsible posts on the junior staff and in the Medical School of St. Bartholomew's, he was appointed Assistant Surgeon at the early age of 28, and in the year 1881 was elected full Surgeon For twenty-three years he visited the hospital nearly every day, and there by his self-sacrificing devotion endeared himself to numberless patients and to the students whom he delighted to teach.

His sphere of activity was not, however, restricted to St. Bartholomew's, for he was also Surgeon to the City of London Truss Society for close on forty years, where his standard of work was of a markedly high character. In addition he was Consulting Surgeon to the City of London Lying-in Hospital, Tottenham Hospital, Friedenheim Hospital, the Memorial Hospital, Mildmay Park, and the West End Hospital for Nervous Diseases. He was for many years a member of the Court of Examiners at the Royal College of Surgeons, an active member of the Council, and held the office of Vice-President. He had also filled the office of President of the Clinical Society and of the Medical Society, and up to the time of his death was Treasurer of the latter society, and devoted much of his time to furthering its interests. For many years Mr. Langton was Treasurer of the Royal British Nurses Association, and he was interested in a variety of other nursing associations.

All institutions to which he was attached will suffer a loss, for, whatever the position filled by him, the same high sense of duty characterized all his work.

From the point of view of one of his pupils it always seemed that Mr. Langton, or "Johnny" as he was called, was at his best in the wards of St. Bartholomew's, which he was in the habit of visiting almost every day of the week, Sundays included. He delighted in his work, he was on the best of terms with his sisters and nurses, he loved teaching the "boys," as he called the dressers, and no one could have been nicer to his house-surgeons, to whom he was as a personal friend.

As a lecturer he could hardly be regarded as brilliant, but he had a method of teaching peculiarly his own and admirably adapted to bring out the best knowledge a student possessed.

Many men will remember with gratitude the little informal "grinds" he used to give in one of the boxes in the old surgery—a small room with as many men as could cram into it, and there he would see out-patients or any case about which his house surgeon wanted advice. There he loved to put his anatomical and surgical questions, and woe betide the man who in his opinion was a "trimmer" or who tried to hedge.

His patients loved him, and he had a marvellous memory for them. He would remember for years their complaint, and even the bed and ward in which they had been. They were not mere cases to him, but interesting men and women demanding and getting his sympathy.

His sense of duty was great, and, though finding it tiring in his latter years, he would never relinquish his turn of night duty, nor fail to respond to a call from the hospital. His retirement from the active staff was a great grief; a man of no hobbies outside his profession, the mere thought even of retirement grieved him. When he became Senior Surgeon, and he saw his name-board at the entrance to the wards transferred to the head of the list, he regretfully remarked, "In the condemned cell at last." As a surgeon

he was a very sound operator, and, what is better, he had good judgement, especially in what he used to say was the most difficult of all things to decide—the knowledge of when not operate.

He was a general surgeon in the best sense of the word, though on the subject of hernia the immense experience gained by many years' hard work at the City of London Truss Society made him an acknowledged expert. This special work gave him much pleasure, arduous as it was and entailing early morning rising. A tribute to his influence there is the constant inquiry for the "old doctor" from numerous patients whom he had relieved.

During the last year or two Mr. Langton had been failing, and a week before his death he became hemiplegic. He died as he had lived—well. Without suffering he passed away, and of him it can truly be said that the world was the better for his work.

MANY Anglo-Indians will regret to hear of the death of Deputy Surgeon-General JOHN LISTON PAUL, which occurred at Torquay on August 25th. He was born at Elgin in 1827, and studied at Aberdeen, where he obtained the degree of M.A. in 1845. He afterwards studied at Edinburgh, where he took the degree of Doctor of Medicine in 1848. After a further period of study in Paris he entered the Medical Service of the Madras Army in 1851. After the usual regimental service, his high professional attainments procured for him the Professorship of Surgery in the Madras Medical College, which he filled most usefully for several years. At the same time he was engaged in a large private practice in Madras, where he gained the esteem and affection of all who sought his advice and aid. He retired comparatively early from the Indian Service with the honorary rank of Deputy Surgeon-General, though the substantive grade was offered to him by the Indian Government. He acted as President of the Medical Board at the India Office during the absence of Sir Joseph Fayrer. After his retirement Dr. Paul conducted an extensive private practice in London, where his skill and kindness gained him many new friends. He recently went to reside in Torquay, where he passed away full of years and greatly mourned. The deceased officer was brother of Lieutenant W. Paul, of the Bengal Army, who was killed at the Relief of Lucknow in 1857 while gallantly leading his men. Dr. Paul was a godson of Liston, the celebrated surgeon.

Deputy Inspector-General JOHN JACK, M.D., died on September 8th at Kensington, at the age of 92. He was the oldest officer on the retired list of the Royal Navy Medical Service. He qualified as a Licentiate of the Royal College of Surgeons at Edinburgh in 1839, entered the Navy in 1842, was made Staff Surgeon in 1854, and Fleet Surgeon in 1867, retiring with the rank of Deputy Inspector-General in 1875. He was awarded the Gilbert Blane Gold Medal, granted to medical officers for the most approved journals of their practice while in medical charge of a ship of war in the Royal Navy.

The Services.

VOLUNTARY AID DETACHMENTS.

WE understand that the formation of voluntary aid detachments is making progress throughout the country, and, as an amendment to paragraph 22 of the scheme for the organization of voluntary aid in England and Wales which we printed in the JOURNAL of August 21st, 1909, and as applied to Scotland on December 21st, has recently been issued by the War Office. We give the purport of it for the benefit of those engaged in the work.

Paragraph 22 relates to the preliminary educational requirements of the voluntary aid detachments, and the Army Council now states that the following bodies are approved by the War Office for the purpose of granting certificates in "first-aid," the list being provisional, and to be added to from time to time: (*a*) The St. John Ambulance Association; (*b*) the St. Andrews Ambulance Association; (*c*) the National Fire Brigade Union; (*d*) the National Health Society; (*e*) the London County Council; (*f*) Provincial County Council, where the conditions as regards instruction and examination laid down in the above quoted paragraph of the Voluntary Aid Scheme are complied with.

Letters, Notes, and Answers.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

BETA writes: Can any reader tell me of a place within easy access of a north London suburb where I could obtain tuition and practice in motor driving, together with efficient practical instruction in mechanism and small repairs?

M.D. writes: My duties take me to very dirty tenements, from which I always bring away a large number of fleas, which seriously impair my night's rest. Could any of your readers suggest a means of dealing with these pests? Keating's powder is not of much use, and has the disadvantage of discolouring the bedsheets.

LUTONIAN writes: What books are most suitable to read for the M.D.Lond., Branch I (Medicine)?

*** The field for reading demanded is a wide one. The following should suffice: (1) A standard textbook, such as Osler's; (2) diseases of children, such as the work of Goodhart and Still; (3) diseases of the nervous system, such as that of Purves Stewart; (4) a work on pathology—general and special; Adami's book, although very large, is up to date, and may be read in parts; (5) smaller works, such as Bosanquet's *Serums, Vaccines, and Toxins in Diagnosis and Treatment* (Cassell and Co.), Latham's *Sanatorium Treatment of Consumption*, and Manson's *Tropical Diseases* are also very useful. The first volume of Clifford Allbutt's *System of Medicine*, "Prolegomena," is most valuable.

RENAL COLIC AND LIFE INSURANCE.

H. D. writes: Could you kindly inform me whether a man aged 28 years who, eleven years ago had an attack of renal colic and recently has had two attacks, and passed a small calculus shortly after the second attack, could safely be recommended to a life insurance company as a *first-class* life?

*** At least three years should elapse after an attack of renal colic before the life could be safely recommended at the ordinary rate, and the history of previous attacks would probably lead to a longer period of probation.

EGYPT AND CHRONIC RHEUMATIC PATIENTS.

C. W. G. asks as to the relative merits of Biskra and Cairo for a patient suffering with chronic rheumatism to reside in during the winter and early spring months?

*** Biskra is an oasis town with sulphur baths within four miles, and is well provided with shady drives. But the objections to it for English patients are that the food (bread, fish, and meat) are not very good, there is no English-speaking doctor nor chemist, and the hotels are not first class. At Helouan and Assuan in Egypt there are special facilities for patients suffering from chronic rheumatism, sulphur baths at the former, within half a mile of good hotels, better food, golf, and other recreations suitable to British patients. Helouan has also the great advantage of being within three-quarters of an hour by train from Cairo. Cairo itself can hardly be recommended as a special resort for chronic rheumatism, though patients who do not require sulphur baths do very well at Mena House, near the Pyramids. Those who have tried both Egypt and Algeria find themselves more comfortable in the former, though the climate of both countries is very similar during the winter and early spring. At both Helouan and Assuan there are English doctors, and there is also one at Mena House.

ANSWERS.

SILURIAN.—For the D.P.H. of the Royal College of Physicians and Surgeons in Ireland the following books are suitable: *Meteorology*, by Sir J. W. Moore (new edition, 1910). Bacteriology: Hewlett's or Muir and Ritchie's *Manual of Bacteriology*; Horrocks's *Introduction to Bacteriological Examination of Water* (Churchill) may also be consulted. Sanitary Law: Birmingham's *Irish Sanitary Law* (Brown and Nolan, Dublin). Hygiene: Parkes and Kenwood's *Hygiene and Public Health* (Lewis, 1909).

LICENCE DUTY ON MOTOR CARS.

J. M. asks whether the occasional use of his car for other than professional purposes debars him from the title to the allowance of one half the licence duty.

*** No. The condition on which the allowance depends is that the car shall be "kept for the purpose of his profession"; if this condition be fulfilled the occasional use for private purposes should be immaterial.

Deaf and Dumb Children.

E. F.—Institutions do not as a rule receive deaf and dumb children under 7 years of age. The educational authorities, however, take cognizance of those over 5, and application should be made to the education committee of the district with regard to the case named.

Mosquitos in Houses.

Dr. F. M. Sandwith (London, W.) writes: "Rus" writes to ask you how to rid a house in the North of England of buzzing biting insects, locally called mosquitos. Why does he not send samples of them to the London or Liverpool School of Tropical Medicine and ask what insect the house is suffering from, and where the breeding grounds probably are? In the meantime he should kill all adult insects, and then destroy their larvae in their breeding pools.

Experience writes: "Rus" can destroy the mosquitos by means of Keating's insect powder. Burn it on a metal plate over a spirit lamp and let the fumes fill the room.

Dr. Arthur W. Thomas (Boscombe) writes: In answer to "Rus's" inquiry, the "insects" of which he complains are probably native gnats, either *Culex irritans* or *vesicans*. There is practically no difference between a gnat and a mosquito. The only cure for these pests is prevention, and, as they must have water to breed in, all water-butts, cisterns, pools, or ponds near the house should be emptied; but if this is impossible, a thin layer of paraffin on the surface of the water will destroy all larvae, thus preventing the perfect fly coming to maturity.

Works on Heredity.

Omne Vivum ex Vivo.—Our correspondent would probably find what he requires among the following works: *The Laws of Heredity:* G. Archdall Reid; Methuen, 21s. (Reviewed in British Medical Journal, vol. i, 1910, p. 1356.) *The Influence of Defective Physique and Unfavourable Home Environment on the Intelligence of School Children:* David Heron; pp. 60. *A First Study of the Influence of Parental Alcoholism on the Physique and Ability of the Offspring:* Ethel M. Elderton; pp. 46. (Reviewed in British Medical Journal, vol. i, 1910, p. 1366.) *Treasury of Human Inheritance:* Parts I and II; published by Dulau and Co.; 14s. (Reviewed in British Medical Journal, vol. ii, 1909, pp. 20 and 884.) *Variation, Heredity and Evolution:* R. H. Lock; published by John Murray; 5s. (Reviewed in vol. ii, 1909, p. 552.) *Influence of Heredity on Disease, with Special Reference to Tuberculosis, Cancer and Diseases of the Nervous System;* published by Longmans; 4s. 6d. (Reviewed in vol. ii, 1909, p. 883.) *Relative Strength of Nurture and Nature:* Ethel M. Elderton; published by Dulau and Co.; 1s. (Reviewed in British Medical Journal, vol. ii, 1909, p. 1620.) *Methods and Scope of Genetics:* W. Bateson; published by the Cambridge University Press; 1s. 6d. (Reviewed in Journal, vol. i, 1909, p. 1182.) *Heredity:* J. A. Thomson; published by J. Murray; 9s. (Reviewed in British Medical Journal, vol. i, 1909, p. 1182.)

Duties of Post Office Medical Officers.

Apex is medical officer to the Post Office in a country district. One of the auxiliary men on his capitation list met with an accident when working in his garden. "Apex" has to visit him at a distance of three miles for a week to dress his wound. Is "Apex" entitled to treat him as a private patient, or must he attend him gratis as a Post Office employee?

*** "Free medical attendance" is held to include, except in the case of accidents arising from the nature of an officer's duties, only such services as the medical officer is able to render in the course of ordinary practice, and not medical or surgical treatment of a special kind. "Apex's" case, strictly speaking, would be held to be covered by his capitation grant, unless the accident was such a severe one as to involve surgical treatment of a "special kind." If "Apex" holds that the latter is the case, he would be well advised to come to some arrangement with the officer in question, and, failing this, to ask the Secretary to the Post Office, through his local postmaster, for permission to charge fees, stating in his application the reasons that prompt it.

LETTERS, NOTES, ETC.

St. Paul's Thorn in the Flesh.

Dr. J. Batteson (West Ealing) writes: May I make a brief reply to Dr. Young's criticism of my letter of September 10th *re* "St. Paul's Thorn in the Flesh"? Dr. Young says:

1. "Christ spoke *generally* in Greek, occasionally in Aramaic." There is absolutely no proof of this statement. "He only knew Aramaic." "Beyond these (the so-called Books of the Law) and learning to read and write in his Aramaic mother tongue, the book knowledge of Jesus did not go. . . . A curse was pronounced against the Jew who taught his children Greek" (Clodd, *Jesus of Nazareth*, p. 67). "It is not probable that Jesus knew Greek. This language was very little spread in Judea beyond those who participated in government, and the towns inhabited by pagans, like Caesarea. The real mother tongue of Jesus was the Syriac dialect mixed with Hebrew which was then spoken in Palestine" (Renan, *Life of Jesus*, p. 36).

2. "The names of at least one apostle and all the seven deacons are Greek." It is a fair surmise that the Aramaic or Hebrew names received Greek forms by the later compilers of the Gospels. The word Jesus is only the Greek form of Christ's real Hebrew name *Joshua*.

3. "Greek was the universal language," etc. Was not this the Augustan age of Roman literature? Did not Horace, Virgil, Cicero, etc., flourish at this period? "It would therefore be impossible for Luke . . . to have written in Aramaic." Why not? If Christ, though a carpenter's son, is assumed by Dr. Young to have spoken both languages, why should not Luke, an educated physician, have done so?

4. "Paul alludes to the *special* event of Christ addressing him in Aramaic." Christ speaking in Hebrew was referred to *incidentally* and not specially.

5. What language did Christ speak to the Greek woman? Aramaic. The Greek woman as a foreigner would be more likely to learn the language of those among whom she lived than the natives a foreign language for which they had little or no use. The marginal reading of the Revised Version merely says she was a Gentile (not a Greek), and a Syro-Phoenician, whose language was Aramaic. Even if she had not been a Syro-Phoenician it was an easy matter for one of the crowd to have interpreted.

6. What language was Jesus speaking when he said "Abba Father"? Aramaic, in which Abba is the correct root for Father, and is not a Greek term at all.

I do not see the advantage to be obtained by buying a Greek grammar of the New Testament (as Dr. Young suggests I should do) in order that I may understand what Christ and his Disciples said in Aramaic. As to the thorn in the flesh, this seems to have been a bodily weakness of a painful, humiliating, and depressing character with recurrent attacks. This theory excludes: (1) Certain spiritual temptations (Luther); (2) carnal incitements (due to a Latin misreading of *stimulus carnis*) (Roman Catholic writers in general); (3) erections, satyriasis (Kraft, etc.); (4) syphilis (Rosenbaum); (5) human opponents (Chrysostom, Erasmus); (6) bodily disease—epilepsy, hysteria, etc. (Ewald), headache (Tertullian), malarial fever (Ramsay and Hows); (7) ophthalmic disease (Farrar).

The Destruction of Flies.

Dr. T. F. J. Blaker (Preston Park) writes: I have read Dr Hardman's Blackpool letter in the Journal of September 3rd on the destruction of flies with much amusement. The idea of a learned doctor and J.P. chevying round his house after these Muscae volitantes, fly-flapper in hand, is highly diverting and reminiscent of that celebrated picture in *Punch*, "The Philosopher and the Bluebottle." But he doesn't tell us what to do when they settle on the ceiling. Are we to fetch the household steps? The conclusion he has come to that "flies are only to an insignificant extent recruited from the outside" I see refuted every day at this time of the year. It happens to be part of my duty to attend a large number of poor people who live near the borough dust destructor, where there are dust heaps and dust carts, and again on the outskirts of the town where market gardeners and such like people dwell who keep large quantities of manure on the premises. All their houses are one black mass of flies in spite of every effort to destroy and keep them under. It is no exaggeration to say they swarm in hundreds of thousands. If these houses were "subjected to sanitary inspection, and the occupiers proceeded against and fined," as Dr. Hardman suggests, loud and angry protests would be at once provoked.

Droitwich.

In a recent note on Droitwich it was stated that a full account of this health resort would be found in our issue for June 15th, 1909. The date given should have been two years earlier—namely, June 15th, 1907 (vol. i, 1907, page 1440).

Spinal Analgesia.

A Correction.—Dr. W. J. McCardie (Birmingham) writes: May I point out that in my paper on spinal analgesia published in the Journal of September 17th, p. 765, second column, line 21, the word "grain" should be "gram."

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Eight lines and under	0	4	0
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Note.—It is against the rules of the Post Office to receive poste *Restante* letters addressed either in initials or numbers.